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Yearbook
1960-62

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YEARBOOK NUMBER

Vol. 58 **January 25, 1960** **No. 2**

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The Cover

● We are privileged to present on the cover of this International Yearbook Number of Pacific Fisherman a Japanese fish print or "rubbing", a modern art form produced by transfer from the actual fish. We are indebted for the original to Hiroshi Tominaga of Taiyo Gyogyo Kabushiki Kaisha. The artist who produced the print—and who caught the fish for it—is his brother, Shizuka Tominaga of Taiyo's branch at Yokosuka. His seal or formal signature appears in color on the cover.

The fish is a "tai", or red Sea Bream, which the Japanese esteem most highly and considered the greatest delicacy of all the fish which swim the sea.

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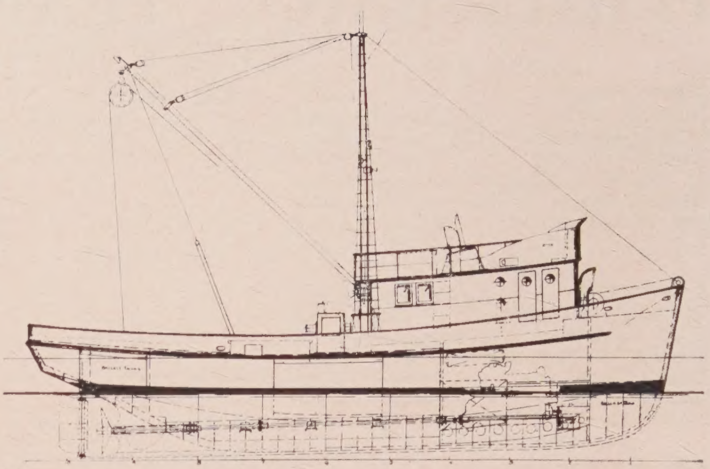
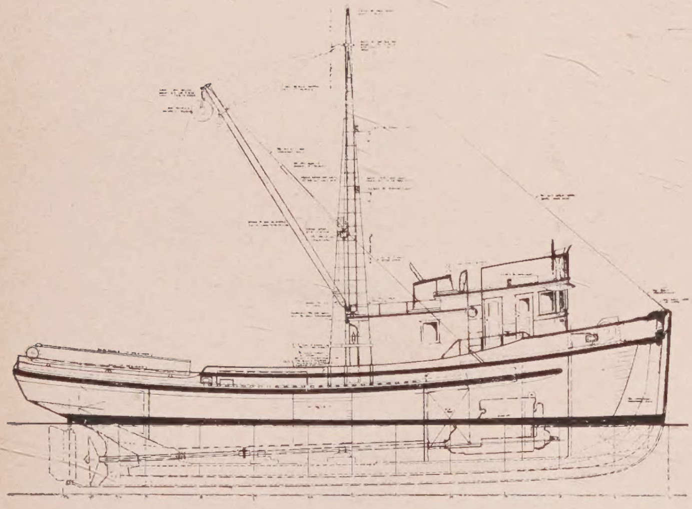
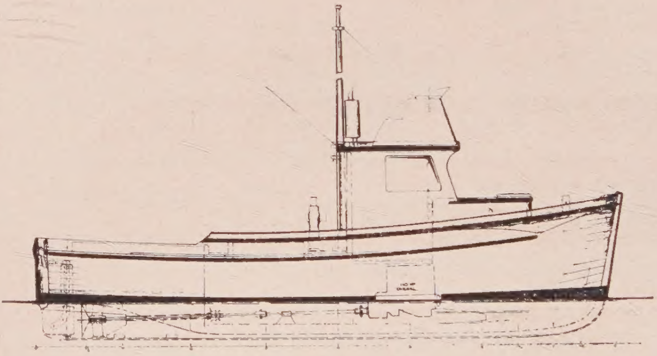


Above, 65′ x 18′ x 9′ steel seiner. 10 knot speed with 240 hp diesel. Ideal for herring, sardines, etc. with large carrying capacity.

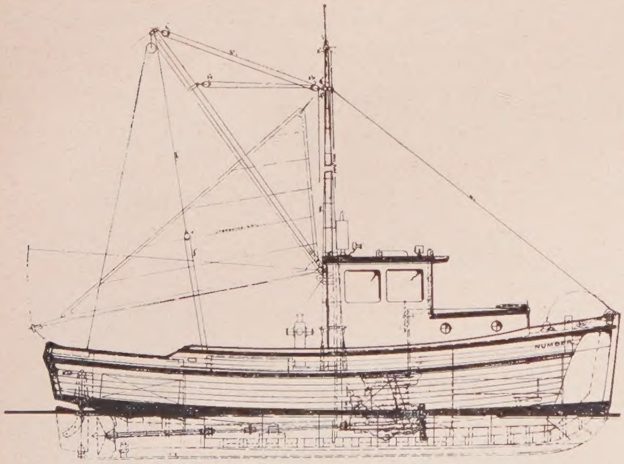
A fleet of 25 of the above seiners are scheduled to be built in Chile in the near future. Designed for large capacity and simplified construction these vessels are ideal for short operating range operation in warm climates. The designs are made so that with few changes boats can be built to operate any place in the world.



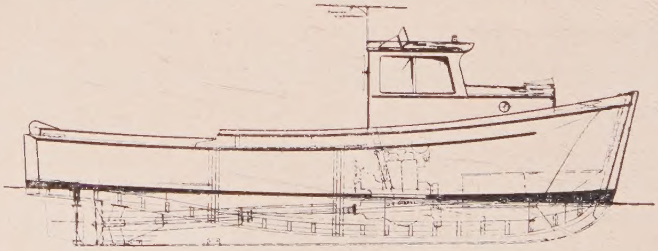
Above, 65′ x 18′ x 9′ wooden seiner, Diesel powered, large capacity all quarters on deck. Designed to meet needs of Chilean fisheries.



Above, 32′ x 11′ x 2′ wooden Bristol Bay Gill Net Boat. Diesel powered—110 hp.



Above, 30′ x 9′6″ x 2′6″ wooden Gill Net Boat for Philippine Fisheries. Diesel powered.



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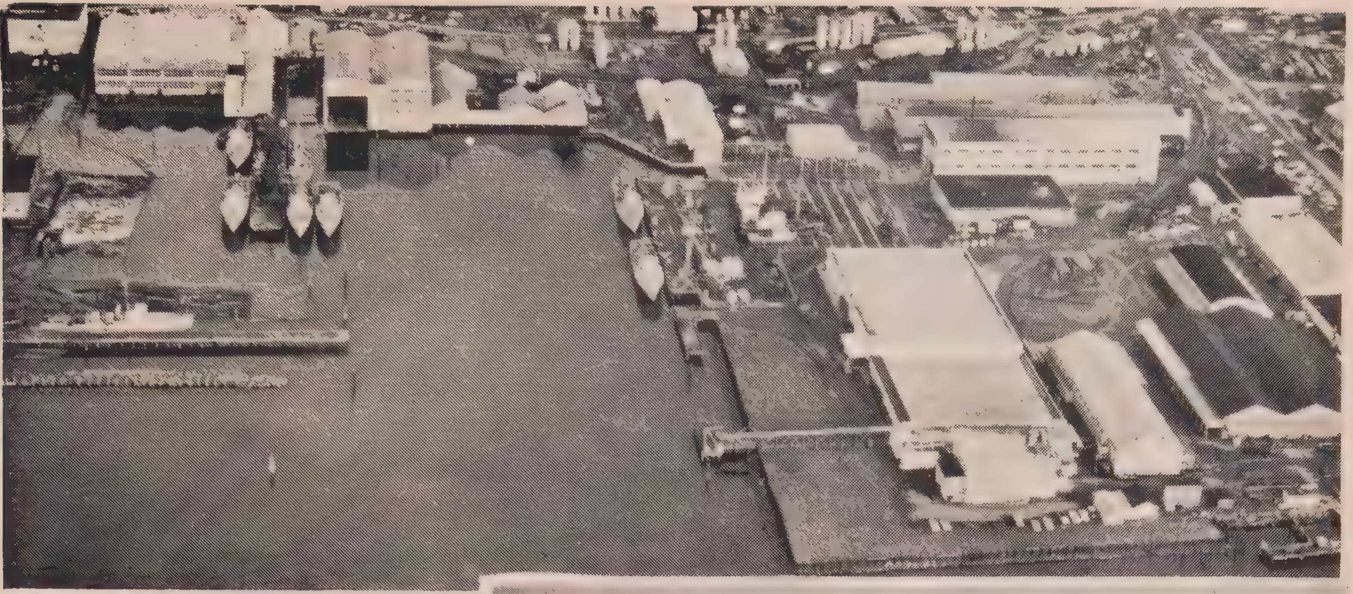

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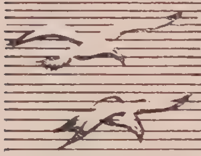

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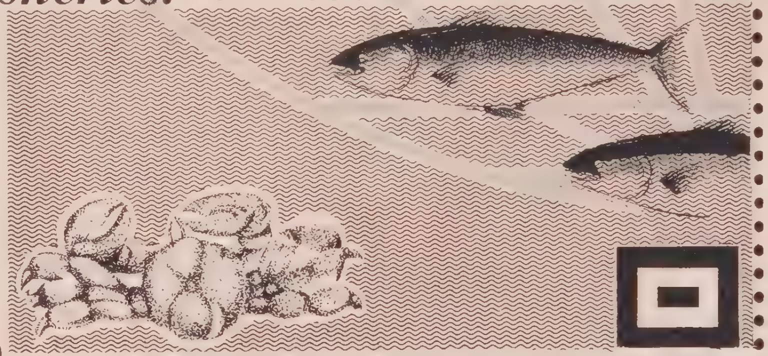

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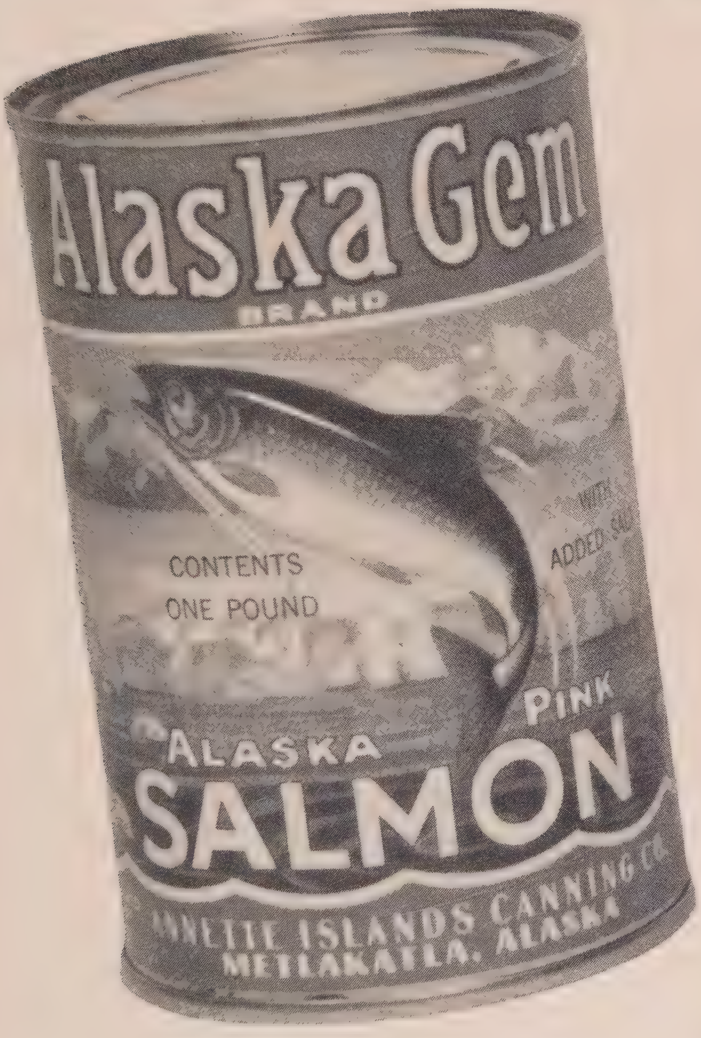

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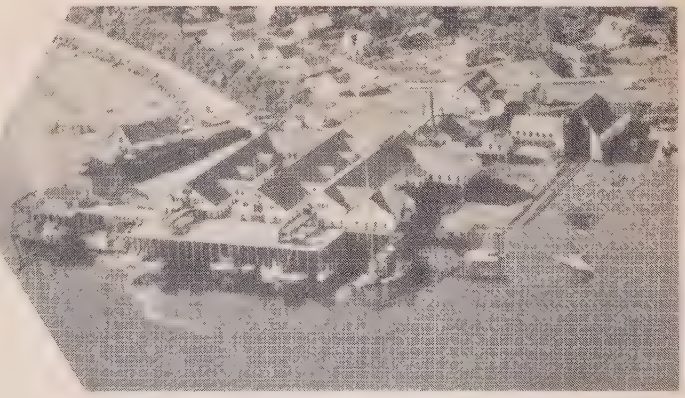

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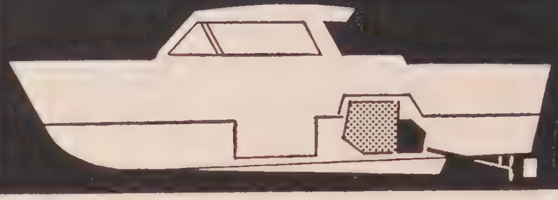

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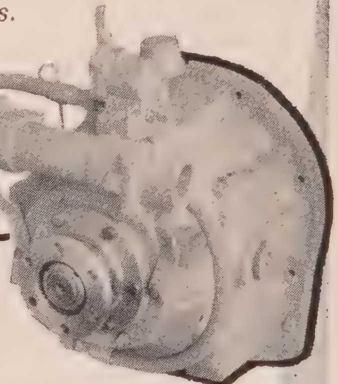

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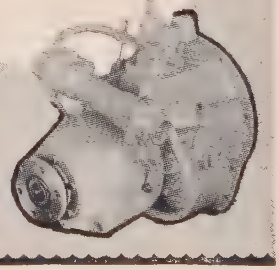

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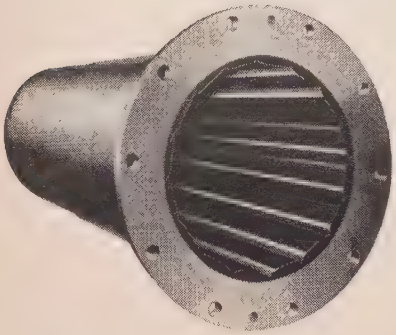

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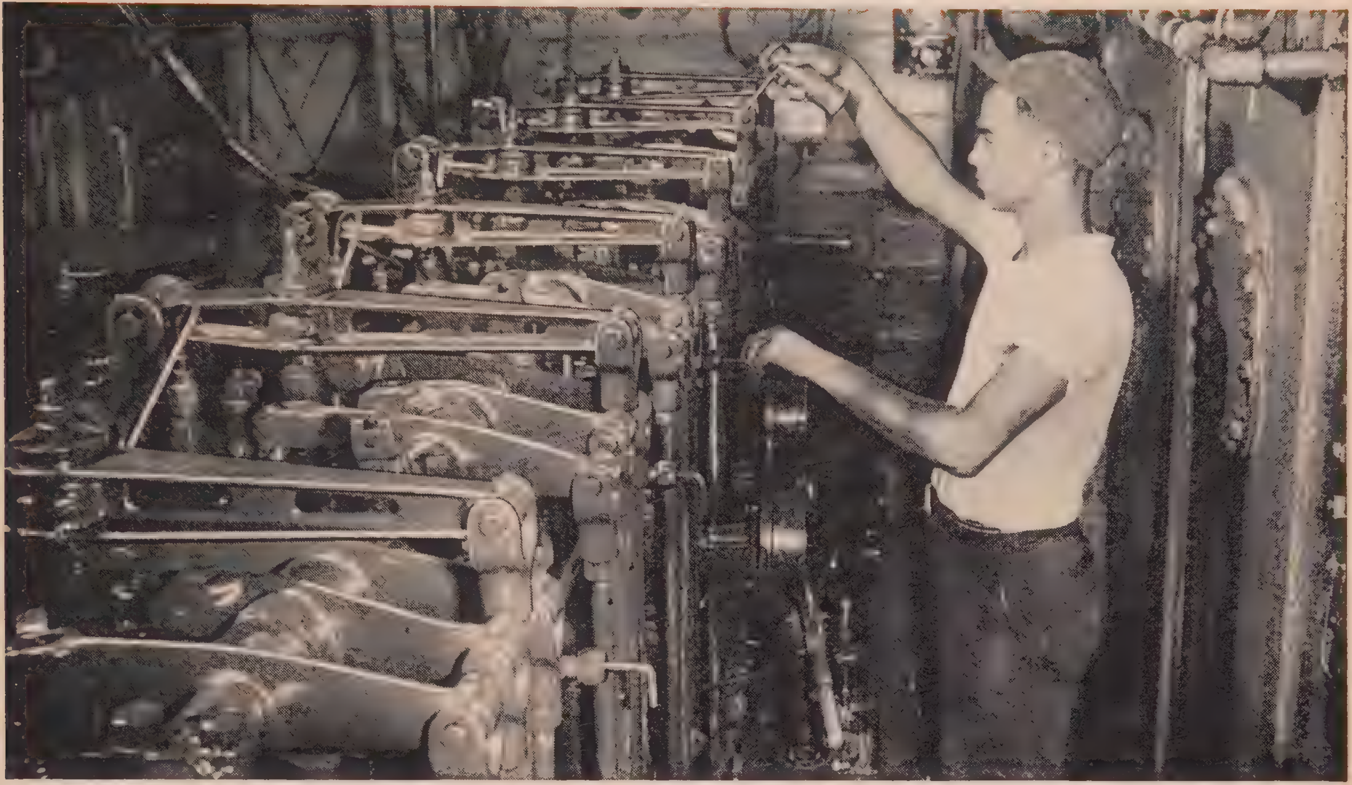

Chief Engineer John Randazza (above) reports RPM DELO Oil makes a big improvement in performance of 250 hp Atlas diesel powering 105-ft. M/V Olympia. "Our previous oil plugged lines and left thick engine deposits," says Mr. Randazza. "Since changing to RPM DELO Oil we've had no plugged lines. We had the heads off after 10,000 hours' operation...the inside of the engine was spotless!"

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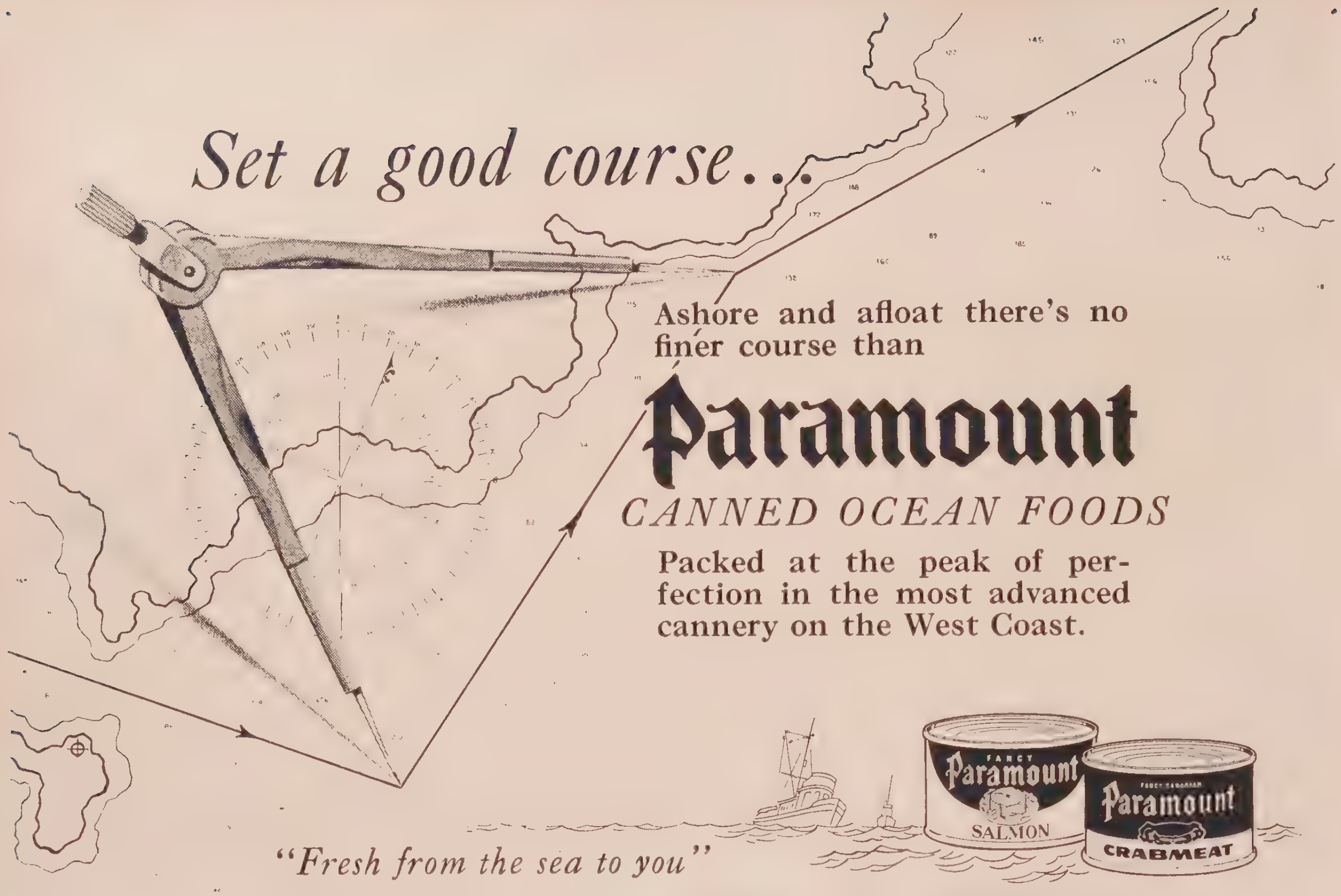

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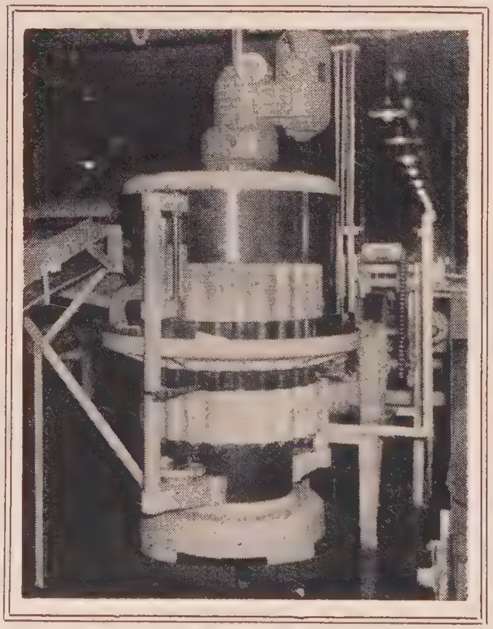

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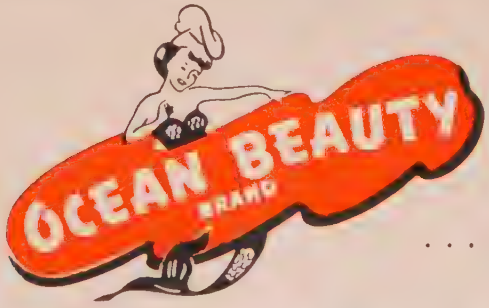

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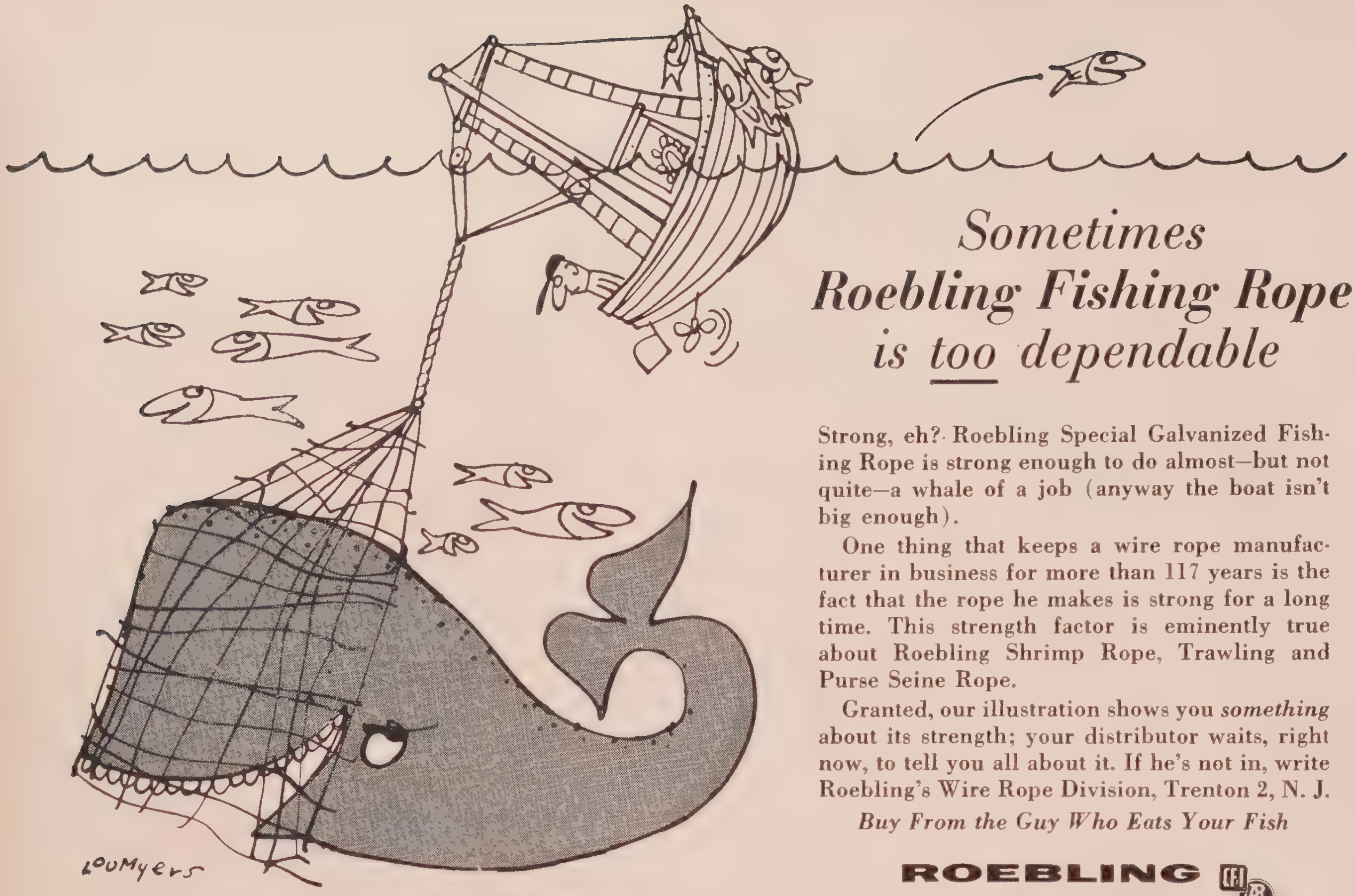
MEMBER NATIONAL FISHERIES INSTITUTE, INC.



Sometimes Roebling Fishing Rope is too dependable

Strong, eh? Roebling Special Galvanized Fishing Rope is strong enough to do almost—but not quite—a whale of a job (anyway the boat isn't big enough).

One thing that keeps a wire rope manufacturer in business for more than 117 years is the fact that the rope he makes is strong for a long time. This strength factor is eminently true about Roebling Shrimp Rope, Trawling and Purse Seine Rope.

Granted, our illustration shows you *something* about its strength; your distributor waits, right now, to tell you all about it. If he's not in, write Roebling's Wire Rope Division, Trenton 2, N. J.

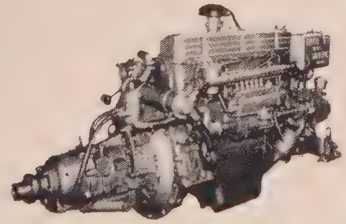
Buy From the Guy Who Eats Your Fish

ROEBLING

Branch Offices in Principal Cities
John A. Roebling's Sons Division, The Colorado Fuel and Iron Corporation

---

BARR MARINE DIESELS



Dynamometer-tested when fully assembled to assure peak performance under all operating conditions

- **Low Initial Cost—from $2068 complete**
- **Heat exchanger system standard on all models at no extra charge**
- **Backed by a firm with over 30 years experience in marine power**

Rugged, dependable Ford Diesel block completely "marinized" by Barr. Prices start at $2068 complete and ready to install in your boat including: heat exchanger, fresh water cooled exhaust manifold, fresh and sea water pumps and a wide selection of hydraulic or manual reverse and reduction gears.

Both 4 and 6 cyl. models are available with front end power take-off.

6-cylinder model develops 96 shaft h.p. @ 2250 r.p.m. on dynamometer with all accessories, weighs only 1200 lbs. including reverse gear. 4-cylinder model develops 60 shaft h.p. @ 2250 r.p.m. on dynamometer with all accessories, weighs 800 lbs. with reverse gear.

Send for complete specifications and prices

BARR MARINE PRODUCTS CO.
Diesel Division, 2713 E. Castor Ave., Phila. 34, Pa.

See These Engines in Booths D-254 and 255 at the N.Y. Boat Show

---

Make a sure catch!

WITH
VINYL PLASTIC
AER-O-BUOY®
NET FLOATS

- Light Weight
- Bright Yellow Colour
- Permanently Buoyant
- Tough, Durable
- More Buoyant than Cork
- Non Corrosive, Mildew Proof

A GUARANTEED CANADIAN PRODUCT

Also Approved Ring Buoys

MANUFACTURED BY
ROBINSON MOULDED PRODUCTS LIMITED

P.O. Box 4042, Terminal "A" Toronto, Canada

ANDERSON
& COLTMAN

LIMITED

Established 1888

LONDON LIVERPOOL GLASGOW

CANNED SALMON
PILCHARDS
CRAB
TUNA

And All Other Canned Foods

HEAD OFFICE

MARKET BUILDINGS, 29, MINCING LANE, LONDON, E. C. 3
Also at
64 STANLEY STREET, LIVERPOOL and 54 MILLER STREET, GLASGOW

TELEGRAPHIC ADDRESS: FONTANELS, LONDON

ALL CODES USED

ANDERSON
& COLTMAN

LIMITED

Protect your shellfish in Vollrath STAINLESS STEEL CONTAINERS

Reduce your risk in handling and shipping oysters and other shellfish—use Vollrath containers of sanitary, solid stainless steel, *the corrosion-resistant metal.* Containers, pails, pans, utensils available—all completely seamless, crevice-free—specifically designed to meet your industry's requirements for maximum sanitation, efficient operation, long-lasting economy.

MEET GOVERNMENT and INDUSTRY STANDARDS FOR MAXIMUM SANITATION

- **Corrosion-resistant**
- **Sanitary**
- **Easy to clean**
- **Durable**

nSf

NATIONAL SANITATION FOUNDATION APPROVED

5-GALLON HOLDING OR RETURNABLE CONTAINER

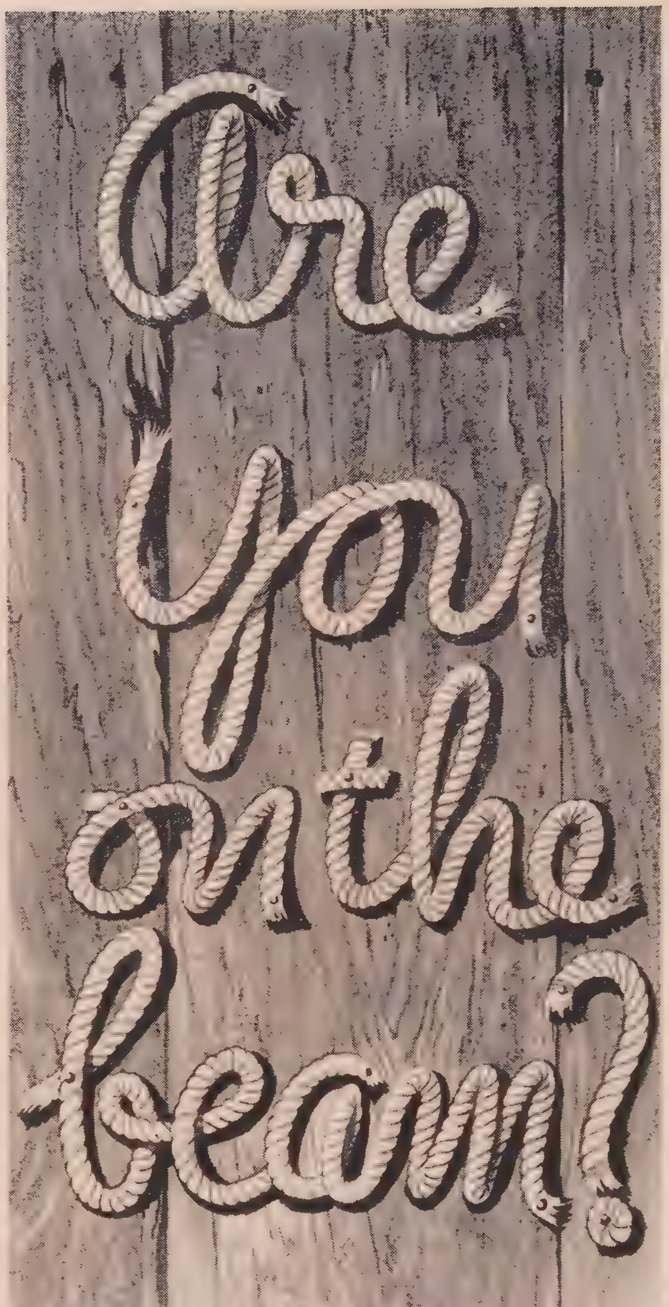
Efficient, long-lasting, sanitary container for packing and shipping oysters. Slip-over cover keeps out foreign matter; permits secure stacking. Sturdy side handles. Holds full 5 gallons without loss of content. No. 5105.

9-PINT SHUCKING BUCKET

Holds a full gallon of shucked oysters. Ends return of bluff—no need for complicated tally system. Substantial stainless steel wire bail handle permits easy handling and pouring—removable for cleaning. Permits fast, trouble-free operation. No. 5109.

THE VOLLRATH COMPANY Sheboygan, Wis.
Sales offices and show rooms: New York, Chicago, Los Angeles

Made by the leading supplier of stainless steel utensils to hospitals, restaurants, food processing and dairy industries. Also producers of boat steering systems and cast stainless steel boat hardware.


Are you on the beam?

get in on the right ship-to-shore channels

⚓ **Have you found** the channel busy when you've tried to call? Then hear this: Now there's a second full-time coastal harbor channel for San Francisco . . . plus additional daytime channels for Seattle and San Pedro. V.H.F. maritime mobile service is also available on the West Coast now. If you sail from your home port to others on the Coast, you'll want to be in on their channels.

⚓ **So, for smooth sailing,** be sure your set is equipped with all the channels you need.

⚓ **To get the full story** on ship-to-shore radiotelephone—plus a fact-filled ship-to-shore booklet—just call your Pacific Telephone business office. Ask for the ship telephone representative.

Pacific Telephone

Longfibre

CORRUGATED kraft

Shipping Containers

Sales Offices
SEATTLE and YAKIMA, WASH. PORTLAND, ORE.
SAN FRANCISCO, OAKLAND and LOS ANGELES, CALIF.

QUALITY OUR FIRST CONSIDERATION

FIDALGO ISLAND PACKING CO.

2360 Commodore Way
SEATTLE 99, WASH.

PACKERS & DISTRIBUTORS
ALL GRADES

Alaska & Puget Sound

SALMON

Selling Agents
H. Bell-Irving & Co. Limited
Vancouver, B. C.

QUALITY OUR FIRST CONSIDERATION

WORLD FAMOUS "CANFISCO" PRODUCTS INCLUDE

- Gold Seal Finest Sockeye Salmon
- Gold Seal Albacore Tuna
- Gold Seal Crabmeat
- Gold Seal Shrimp

THE CANADIAN FISHING COMPANY, LIMITED Vancouver, B.C.

BARR

MARINE CONVERSIONS

for
ALL MODERN
AUTO ENGINES

- MICHIGAN PROPELLERS
  Inboard-Outboard
  Repair Station
- CAPITOL GEARS
- PARAGON GEARS

277 h.p.
Oldsmobile
V-8

THOMSON MACHINE WORKS

235 First St. San Francisco 5, Calif. DOuglas 2-5069

COLBERG Builds Better Fish Boats

Large or Small—Wood or Steel. At Colberg's you get your money's worth!

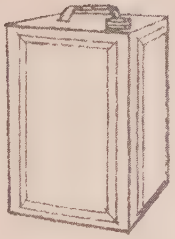
COLBERG BOAT WORKS
STOCKTON, CALIFORNIA

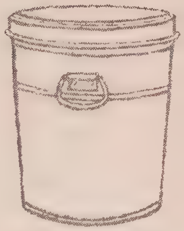
STERN
a good CAN name
since 1901

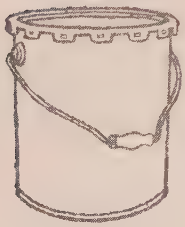
METAL CANS
SERVING MAN FOR 150 YEARS • 1810-1960

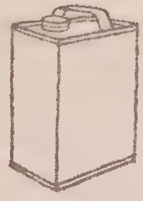
CANS FOR INDUSTRY

1 GALLON STERN-TITE PAINT PAIL

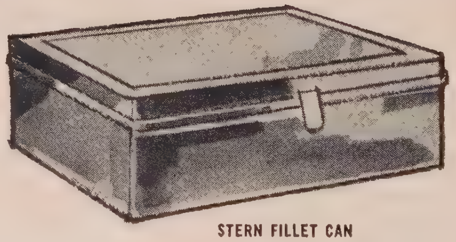

5 GALLON SQUARE


TAPERED FROZEN CREAM STORAGE


5 GALLON STEEL


1 GALLON F

POTATO CHIP


STERN FILLET CAN

This year marks the 150th Anniversary of the Metal Can Industry and the 59th year in which Stern has been producing cans to bring greater efficiency and economy to business.

1 GALLON CLAM AND OYSTER

STERN CAN COMPANY, INC.

71 VON HILLERN ST., BOSTON 25, MASSACHUSETTS
5437 SO. MASSASOIT AVE., CHICAGO 30, ILL.

Consumers everywhere insist on . . .

SNOW MIST

brand® canned fish products

SALMON
SHRIMP
TUNA
CRAB

ALSO FRESH, FROZEN, SALT, SMOKED AND SHELL FISH

WHIZ FISH PRODUCTS COMPANY

CANNERS • DISTRIBUTORS • IMPORTERS • EXPORTERS

2000 Alaskan Way, Seattle 1, Washington, U.S.A.

Telephone MAin 4-2155
Teletype Seattle 104
Cable Address:
WHIZ FISH SEATTLE

THE GREAT GRIMSBY COAL, SALT & TANNING CO., LTD.
Head Office: GRIMSBY, England.
Everything for Trawlers and Draggers.
Nets, twine (manila, nylon, terylene); floats (steel and aluminum); rollers, danlenos, etc.
U. S. Distributors:—

Boston & Gloucester:
The Westerbeke Fishing Gear Co., Inc.
Fish Pier Road,
BOSTON, Mass.

Seattle:
The Nordby Supply Company,
Salmon Bay Terminal,
SEATTLE, 99, Wash.

OLYMPIC GALLEY RANGE
— Oil Burning —

Compact and seaworthy. Features include a concealed oil burner . . . adjustable sea rails . . . and a weather-proof gleaming enamel finish. For details on the four models available, write us or see your marine dealer!

WASHINGTON
STOVE WORKS
EVERETT, WASHINGTON

"Builders of Good Stoves Since 1875"

CARRON'S "MOBY DICK"

NETTING

For Huge PROFITS—Bigger HAULS—
NYLON—COTTON—NYVIS
For Seines—Trawls—Traps—Etc.
Secure at your DISTRIBUTOR or DIRECT
Prompt Deliveries—Reasonable Prices
Mfgr's. Fine Netting Quarter Century

THE CARRON NET COMPANY
Two Rivers, Wis.

WORTHINGTON FISHING INDUSTRY REFRIGERATION
VESSELS — PLANTS
ENGINEERED TO YOUR REQUIREMENTS
PUGET SOUND ENGINEERING, Inc.
3838 - 10th N.E., Seattle 5, Washington MElrose 3-2500

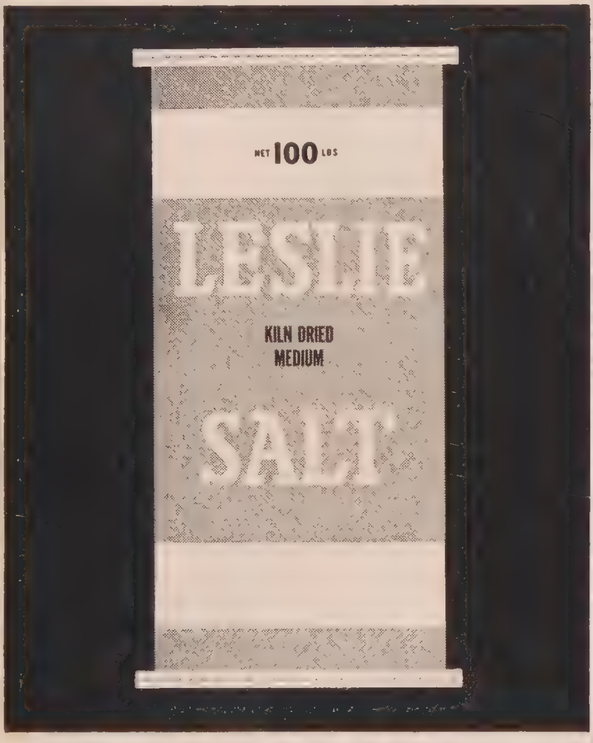
SEA WATER CHILLING
BRINE FREEZING
ICE HOLDING
PIPE COILS
CHILLERS
PACKAGE UNITS
FREON OR AMMONIA

UNION FISHERMEN'S CO-OPERATIVE
PACKING COMPANY

A PROVED PRODUCT

FOR EVERY FISHERY USE!

LESLIE SALT

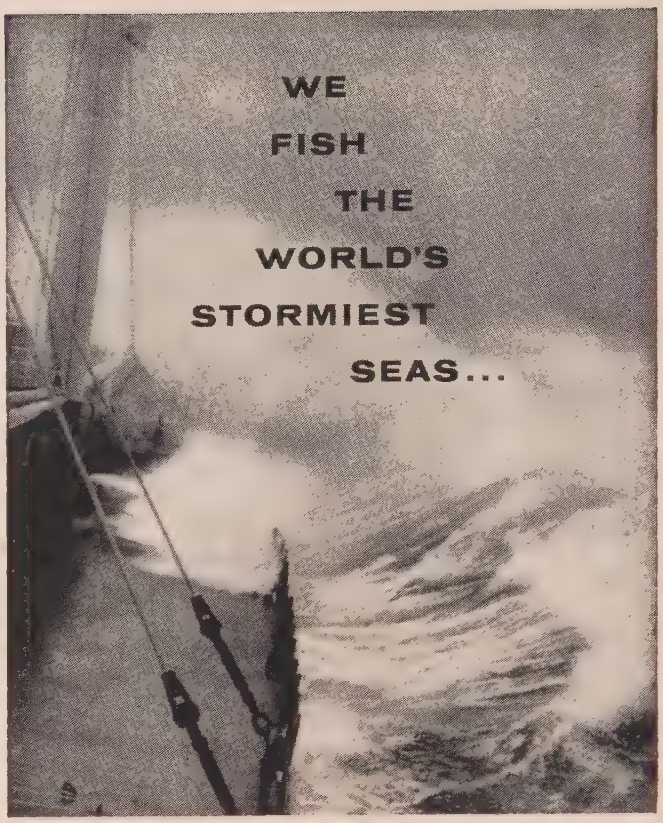


CHECK THESE SPECIAL GRADES:

- Kiln Dried Fine for mild curing.
- Kiln Dried Medium and Vacuum Canners for dependable canning.
- Kiln Dried Coarse for use in nets.
- Packed in following type bags: multi-wall paper, burlap, asphalt laminated cotton and polyethylene laminated paper.

LESLIE SALT CO.

BELL STREET TERMINAL, PIER 66, SEATTLE
48 S. E. HAWTHORNE, PORTLAND
505 BEACH STREET, SAN FRANCISCO
920 LESLIE STREET, LA HABRA, CALIF.
IN CANADA:
VANCOUVER SALT CO., LTD., VANCOUVER, B. C.



for the

FABULOUS KING CRAB

Along the Aleutians and deep beneath the remote and stormy Bering Sea, swims one of the world's greatest gourmet treasures, the Alaska King Crab. Wakefield sends out American ships especially equipped to fish these dangerous seas, bring up the ten to twenty pound giants in immense traps and nets, then prepare and quick-freeze their succulent meat fresh from the icy Arctic waters. And shellfish fanciers agree, the result is worth the trouble.

Only WAKEFIELD'S Offers:

- 19 years of experience freezing ALASKA KING CRAB.
- Superb quality . . . always.
- Year-round supply, with plants and ships in every Alaska King Crab producing area.
- A complete line—Crab Meat and Crab Legs in the Shell—10 attractive carton sizes for the retail and institutional trade.
- National Advertising . . . An aggressive merchandising program.

Tie in with the leader in Alaska's fastest-growing industry! Write to Wakefield's Deep Sea Trawlers, Fishermen's Terminal, Seattle 99, Wash., or to Wakefield Fisheries, Port Wakefield, Alaska.

WAKEFIELD'S

GIANT ALASKA

FRESH-FROZEN KING CRAB

Canning and Selling Salmon for Over Sixty Years

Red Salmon Co.

NAKNEK, BRISTOL BAY,
ALASKA

Packing

RED ALASKA SOCKEYE, ALASKA KING and ALASKA CHUM SALMON

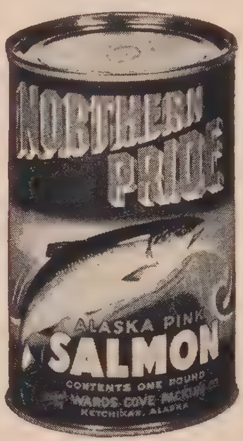
Wards Cove Packing Co.

Beegle Packing Co.

KETCHIKAN, ALASKA

Packing

RED ALASKA SOCKEYE, ALASKA COHO, PINK and CHUM SALMON



Frank B. Peterson Co.

SEATTLE, WASHINGTON

SELLING

"DEEP SEA" BRAND — Alaska Red Salmon, Fancy Albacore Tuna, Minced Razor Clams and Dungeness Crabmeat.

"ROYAL CLUB" BRAND — Alaska Pink Salmon.

"JACK FROST" BRAND — Alaska Red Salmon and Albacore Tuna Flakes.

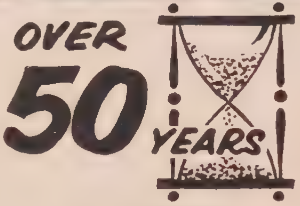
"PIRATE" BRAND — Alaska Chum Salmon and Grated Albacore Tuna.

GENERAL OFFICES:
303 East Northlake Seattle 5, Washington Phone: ME 3-0020
Mail Address: P. O. Box 87, University Station, Seattle 5, Wash.

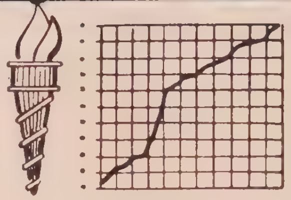
CABLE ADDRESS:
"Peterson", Seattle

IN CHICAGO BUYERS "Phone FROHMAN FOR SERVICE!"
A COMPLETE SELLING ORGANIZATION

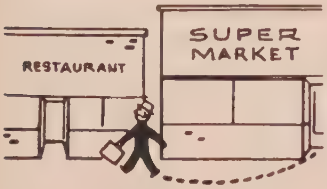
COMPLETE TRADE COVERAGE



OF MARKETING & SALES PROMOTION EXPERIENCE


NATIONALLY RECOGNIZED HIGH STANDARDS OF SERVICE

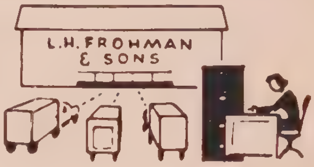
SPECIALISTS IN BRAND BUILDING



RETAIL AND INSTITUTION SPECIALTY WORK

CREDIT, INVOICING & TRAFFIC SERVICE

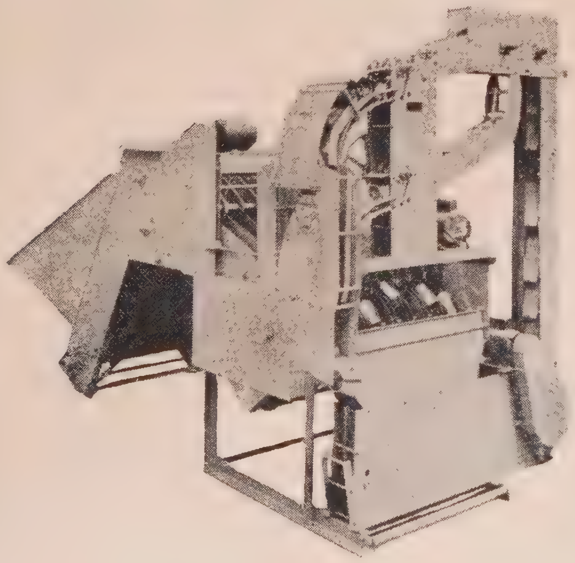
RECEIPT AND DISTRIBUTION OF CARS



CONSIGNED STOCK SELLING & RECORD KEEPING

L. H. FROHMAN & SONS Sales Agents
FOR PRODUCERS OF CANNED AND FROZEN FISH AND SEA FOODS
510 NORTH DEARBORN STREET CHICAGO 10 TELEPHONE SUPERIOR 7-8375

COMPACT CAN UNSCRAMBLERS
For Round and Flat Cans



JOHN ALBERTOLI
MANUFACTURERS OF CAN DISTRIBUTION AND BAG UNPACKERS SINCE 1921
418 Beach St. GRaystone 4-8856
San Francisco, Calif.

NET-LIFE
net and line preservative

The Original and Genuine In Use Since 1944

❶ Easy to apply, no heating; dipping time—5 to 10 minutes. Quick to dry—6 to 12 hours.

❷ Highest fungicide, bactericide, & germicide value.

❸ No burning of net. Not harmful to handle. No after stickiness.

❹ Uniform penetration to core of the net.

❺ A truly homogeneous solution. No settling or separation of ingredients.

❻ Manufactured under controlled, scientific conditions by the pioneer of this modern type of preservative.

ALL OF WHICH ADD UP TO GREATER ECONOMY THRU' SAVINGS IN NETTING, TIME, AND MANPOWER.

A-M
PRESSTITE DIVISION
AMERICAN-MARIETTA COMPANY
Western District
600 LAIRPORT ST. • EL SEGUNDO • CALIFORNIA

. . . next time I'll use TRIPLE "C"!

QUALITY! Last time I painted, I bought every thing but quality. Now, only a few months later, it's time to paint again. Next time—TRIPLE "C"—Cape Cod Copper Compound—for a full season with a clean, slick and drag-free boat bottom!

AMERICAN MARINE PAINT COMPANY

SINCE 1903

1959 NEW ENGLAND

BOAT: Tuna Seiner SILVER MINK

CATCH: 1,700,000 lbs. of Blue Fin — within 2 months!

REMARKS
STARR NYLON NETTING praised by Skipper

1960
MORE TUNA WITH
STARR
NYLON NETTING
all the way!

CAPT. MANUEL PHILLIPS
Provincetown, Mass., owner-skipper, reports the facts:

"850 tons with *only one-third* of our 325 fathom long seine in 1959 made up of Starr Nylon Netting. Without Starr we wouldn't have gotten half . . .

"Other webbing continually tore . . . and we were ashore as many as four days repairing it. But no trouble with the piece of STARR webbing — not even when we caught a whopping 260,000 pounds of tuna in one set . . .

"Next year we are going *all the way* with our entire tuna seine being made up by STARR."

Another in a new series of Starr advertisements direct from the fishermen using Starr Nylon Netting.

STARR NETS

STARR NETTING . . . STAR PERFORMANCE

A. M. STARR NET CO.
EAST HAMPTON, CONN., U.S.A.

for immediate repairs

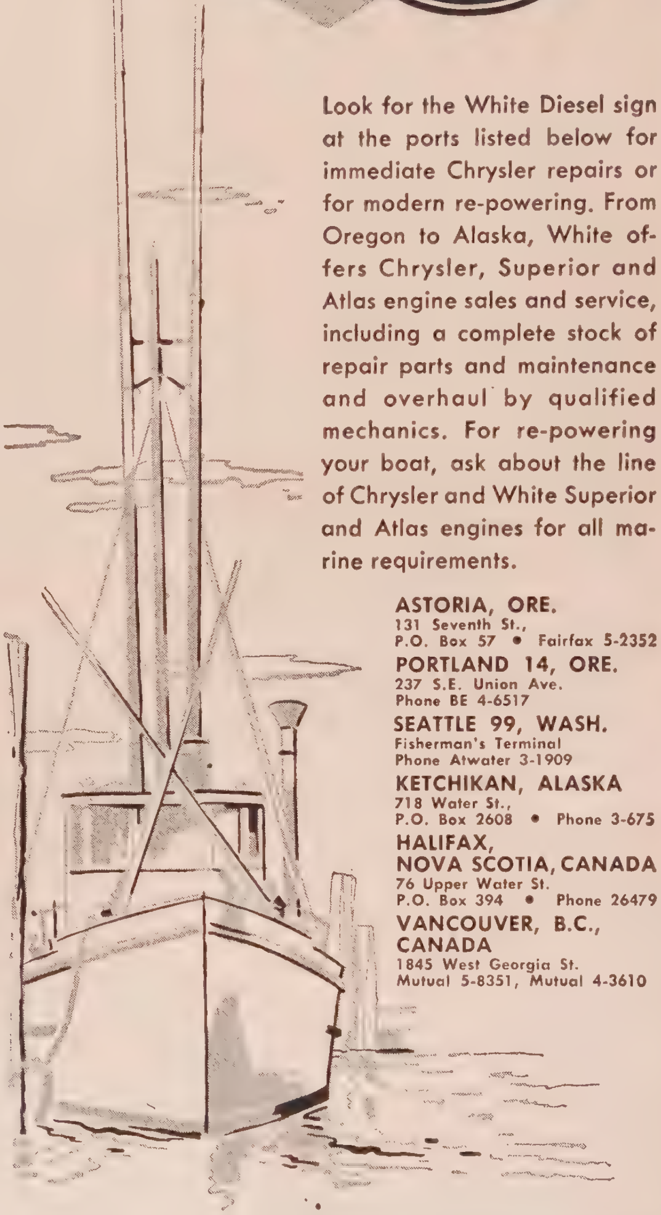
for modern repowering

get complete . . .

CHRYSLER

SALES and SERVICE
. . . at this sign

White DIESEL



Look for the White Diesel sign at the ports listed below for immediate Chrysler repairs or for modern re-powering. From Oregon to Alaska, White offers Chrysler, Superior and Atlas engine sales and service, including a complete stock of repair parts and maintenance and overhaul by qualified mechanics. For re-powering your boat, ask about the line of Chrysler and White Superior and Atlas engines for all marine requirements.

ASTORIA, ORE.
131 Seventh St.,
P.O. Box 57 • Fairfax 5-2352

PORTLAND 14, ORE.
237 S.E. Union Ave.
Phone BE 4-6517

SEATTLE 99, WASH.
Fisherman's Terminal
Phone Atwater 3-1909

KETCHIKAN, ALASKA
718 Water St.,
P.O. Box 2608 • Phone 3-675

HALIFAX,
NOVA SCOTIA, CANADA
76 Upper Water St.
P.O. Box 394 • Phone 26479

VANCOUVER, B.C.,
CANADA
1845 West Georgia St.
Mutual 5-8351, Mutual 4-3610

WHITE DIESEL ENGINE DIVISION

Superior ENGINES · ATLAS Imperial DIESEL ENGINES · White DIESEL

THE WHITE MOTOR COMPANY

PLANT AND GENERAL OFFICES, SPRINGFIELD, OHIO

SIDWELL & CO. LIMITED

MONUMENT HOUSE
14/16 MONUMENT STREET

LONDON, E. C. 3

We believe that in order to represent Packers successfully for sales in the United Kingdom and to obtain the full confidence of buyers, it is essential that Representative Agents should have had practical experience in the production areas, to know and to distinguish between the varying qualities, and to be familiar with the many problems besetting packers.

We have this background, and therefore with confidence personally serve as the link of mutual understanding which is vital to the smooth flow of business between Packers and Buyers.

Cable: SAMONSALES LONDON

Canned	**SALMON** **TUNA** **CRAB** **SHRIMPS**
Frozen	**SALMON** **HALIBUT** **PREPACKED FISH**
Mildcured	**SALMON**

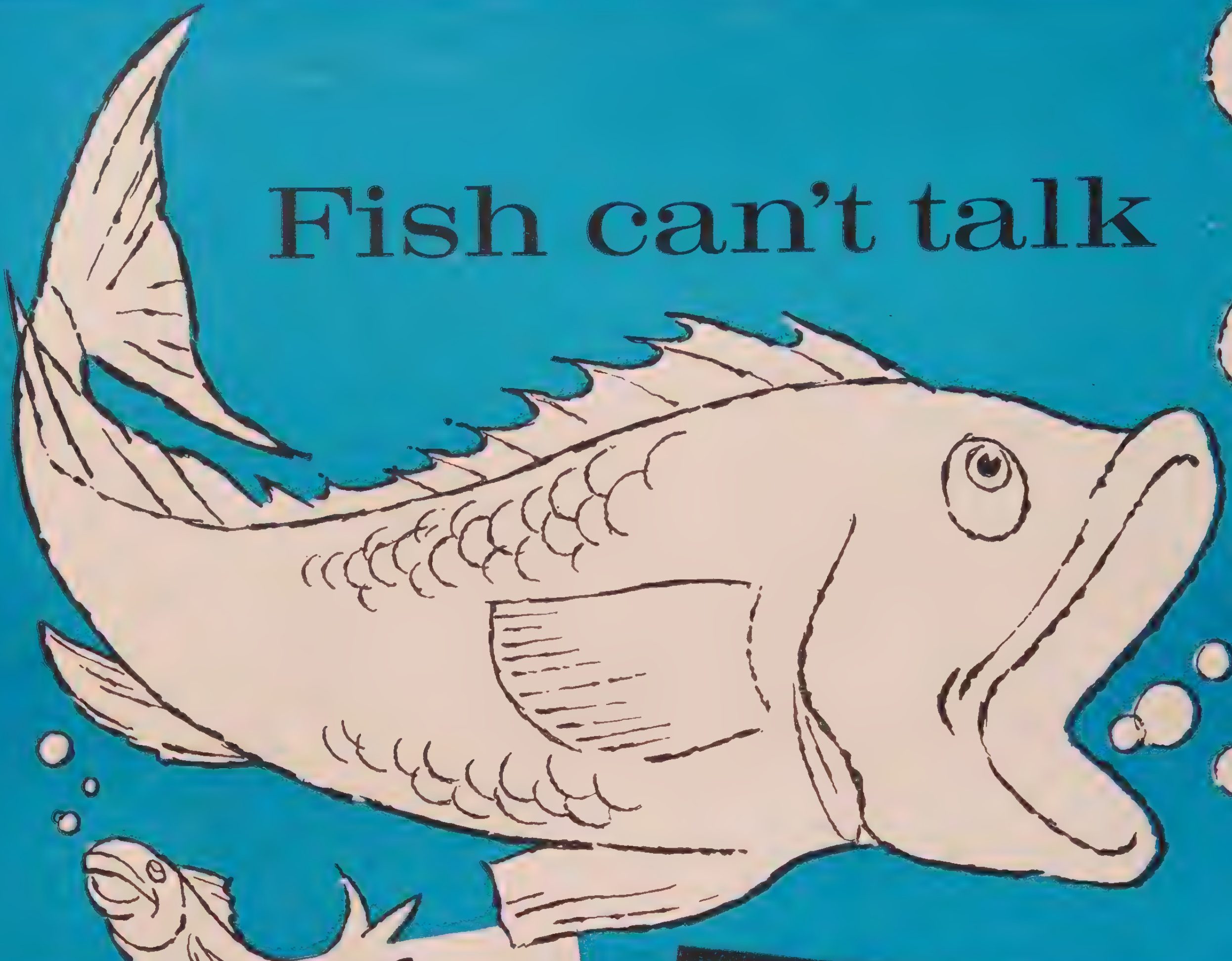
SIDWELL & CO. LTD.,
Produce Exchange Building,
8 Victoria Street,
Liverpool, 2.

SIDWELL & CO. LTD.,
Tori - 1 - Chome
Nihonbashi, Chuo-Ku
Tokyo, Japan

SIDWELL & CO. LTD.,
23 Apsley Road,
Clifton,
Bristol, 8.

SIDWELL & CO. (London) LTD.
Aalesund, Norway.

Fish can't talk

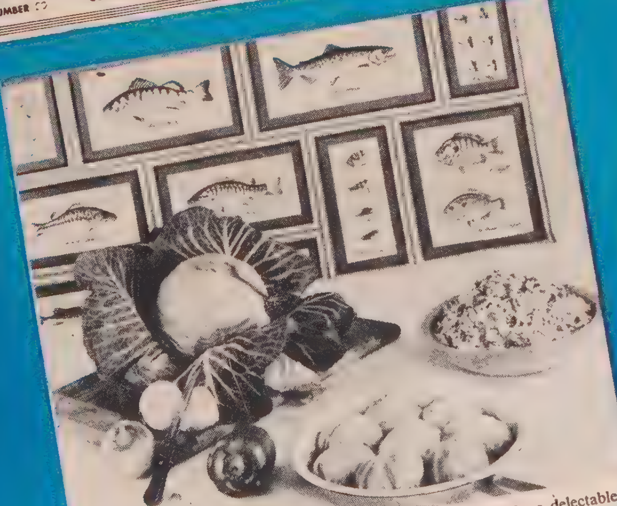


CANNED FOODS

Merchandiser Digest

CONTINENTAL CAN COMPANY, 100 E. 42nd ST., NEW YORK 17, N. Y.

NUMBER [illegible]

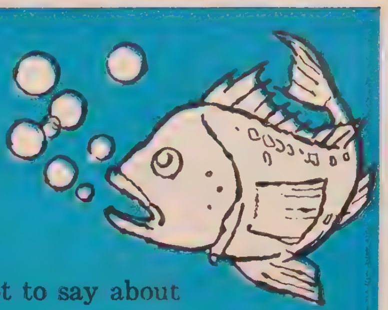


Cabbage, when combined with canned salmon, turns out to be a delectable main course dish or salad. In addition to regular salmon shelf stocks, put a dozen cans in with your cabbage. A home-made sign suggesting the combination should be the clincher.

PROMOTION Pointers

The time to spotlight your complete line of canned fish and fish specialties is during the "Fish 'n' Seafood Parade," October 19-25! National magazines, newspapers, radio and TV will carry a flow of new, exciting recipes.

To start sales rolling, the following point-of-sale material is available: (1) A 6-color ceiling mobile featuring three appetite-appealing fish dishes; (2) Six diecut paper posters; (3) A four-color window poster featuring the theme of the promotion. Newspaper mats and shelf stickers are also available. For complete details, contact: National Fish and Seafood Week Committee, 1614 Twentieth Street N.W., Washington 9, D. C.



...but if they *could* talk, they'd probably have a lot to say about Continental—and how we help you sell fish in the food store. Continental speaks up for fish in hundreds of sales-making ways—in the Canned Foods Merchandiser Digest, mailed regularly to 100,000 supermarket operators and headquarters buyers throughout the U. S. . . . with newsletters to brokers . . . with tips and recipes to newspapers, magazines and home economists.

Here you see some of our recent efforts on behalf of our speechless friends from the deep. Continental spurs these promotions—for tuna, salmon, and other varieties—every day, week, and month of the year.

CONTINENTAL CAN COMPANY

Russ Building, San Francisco 4
1120 Wilshire Boulevard, Los Angeles 17
Executive Building, Portland 4
Skinner Building, Seattle 8

METAL CANS
SERVING MAN FOR 50 YEARS · 1910-1960

TUNA *(Tests conducted over an 18-week period)*

None of the three multiple packaging combinations used resulted in significant sales gains when compared to single cans alone. However, the sales increase of 5.6% obtained with the 3-pack plus singles approached significance. An increase of 7% was required.

Average Sales Per 1,000 Checkouts	(No. of Containers)
Single cans	108
2-pack plus singles	113 (4.5% increase)
3-pack plus singles	114 (5.6% increase)
4-pack plus singles	106 (1.9% decrease)

Set a course for big volume by tying-in with the biggest promotion yet on behalf of fish and seafood! It's the "Fish 'N Seafood Parade" which runs from October 19-25. National publicity will carry a flow of new recipes in national magazines, newspapers, on radio and TV

For further details and available point-of-sale material (mobile, 7 posters, ad mats, shelf stickers), contact the National Fish and Seafood Week Committee, 1614 20th Street, N.W., Washington 9, D.C

Tuna's always timely. Start with a basic display (this one in a California market sold between 20-25 cases in one week). Then, add related items to fit the season – noodles, rice, pimentos, etc., for cold weather casseroles; mayonnaise, olives, etc., for spring and summer salads and sandwiches.

FLOHR & CO. METAL FABRICATORS

HANDLING AND PROCESSING EQUIPMENT

FOR THE

CANNERS — FREEZERS — SHELL FISH PLANTS

BARGES BRINE CHILLING INSTALLATIONS ELEVATORS CONVEYORS BINS TANKS

ENGINEERING & DESIGN SERVICE STEEL, STAINLESS STEEL, ALUMINUM

3920 6th Ave. N.W., Seattle 7, Washington
Telephone: MElrose 3-2222

For 62 Years

CINCOTTA BROS.

has brought YOU the

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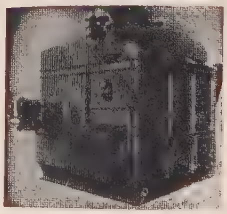

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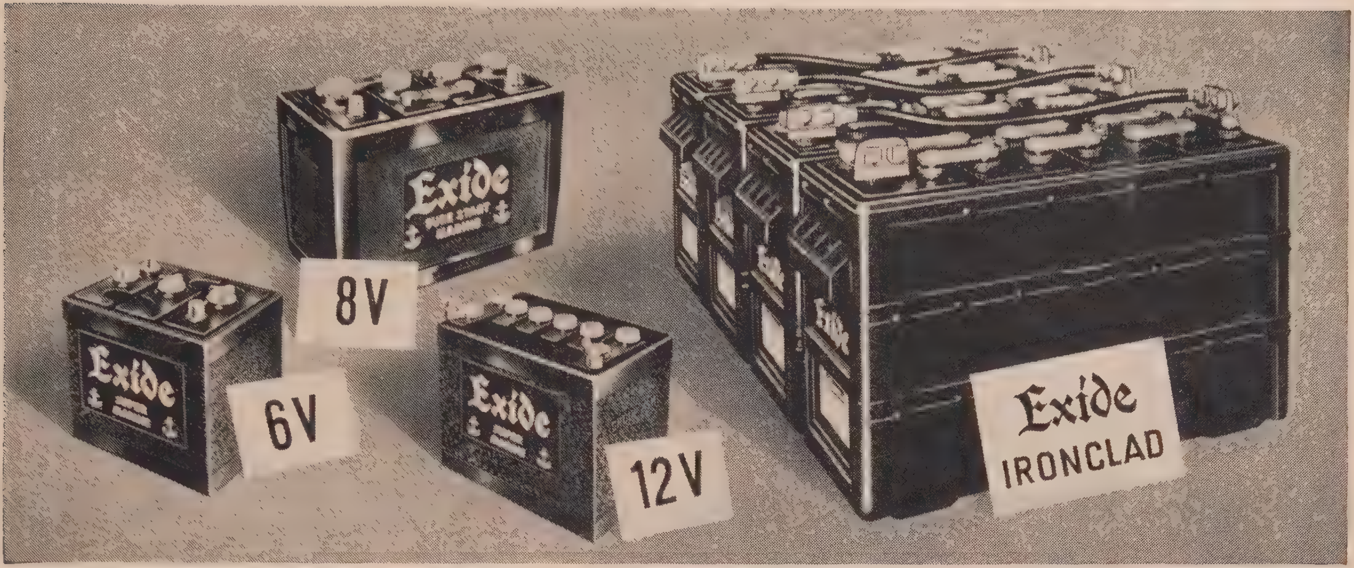

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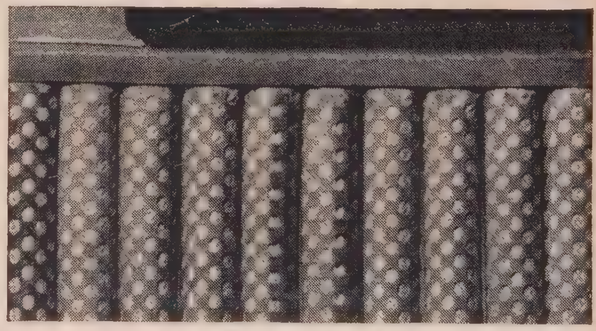

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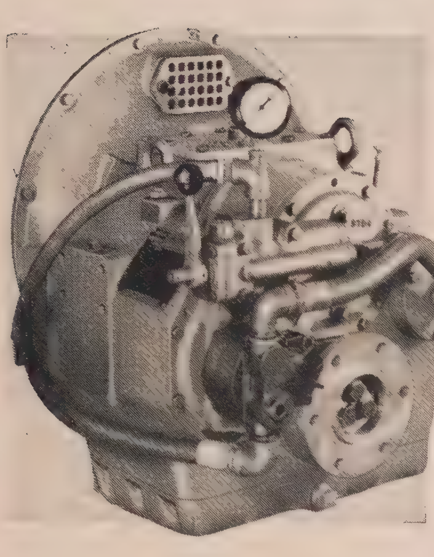

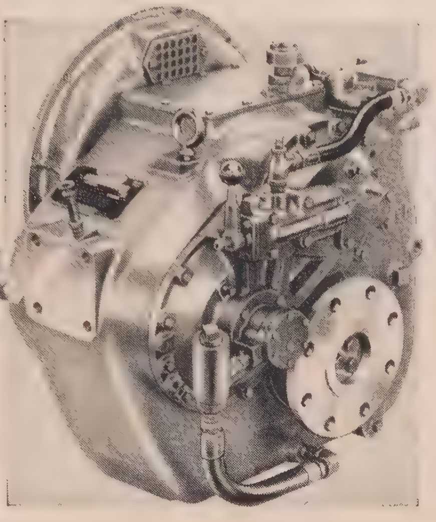

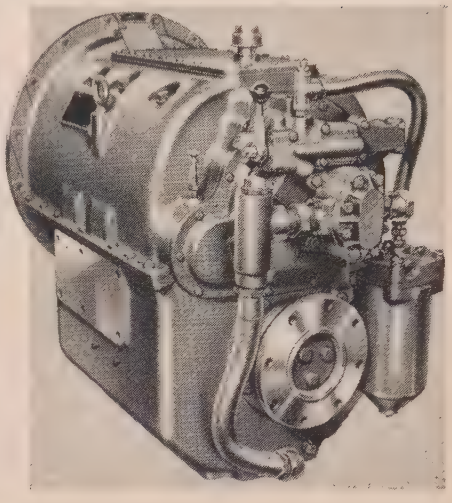

NEW MG-508

A smaller version of the MG-512 with the same features that have made the MG-512 the largest-selling gear in its class. Three optional driving rings permit easy replacement of older model Twin Disc gears (including the war surplus X8708) without flywheel change. Ratios—1.47:1, 2.04:1, 2.95:1 and 3.39:1.

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Cummins JNS, HRS, NH, NTO
General Motors 4-71, 6-71*
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*Both new and war surplus.

MG-512

Designed for medium-speed engines up to 250 hp and high-speed engines up to 500 hp. Seven ratios—2:1 to 6:1—in two different boxes permit selection of the most efficient wheel for any type of operation. Overall length (flange to flange) varies from 17.8″ to 22.1″ depending on the ratio desired.

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General Motors 6-110, 8-V-71
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Write for New Bulletin No. 319

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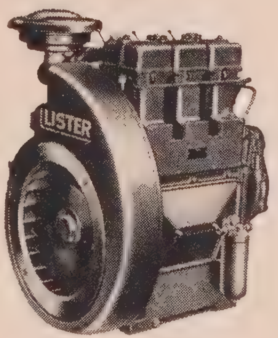

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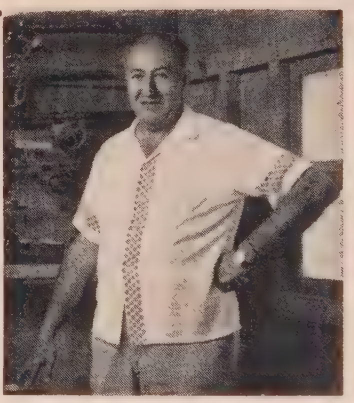

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"Super Market Merchandising's" National Brands Story (Century Food Markets, Youngstown, Ohio) July, 1959 issue, reveals that:

Libby's Red Salmon —	16 oz.	($1.77)
Libby's Red Salmon —	7¾ oz.	($1.28)
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All belong to the "Blueblood" products . . . producing a weekly gross profit of at least $1 per store. (There were only 429 products in this category)

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1960 PACIFIC FISHERMAN INTERNATIONAL YEARBOOK NUMBER

Taking Note of a New Note

- This 1960 *Pacific Fisherman Yearbook Number* — the 56th which this journal has published since its founding—differs from all of its 55 predecessors.

Distinction lies primarily in the fact that it is an *International* number, with a substantial portion of its contents devoted to reports on significant fisheries of countries throughout the world—and particularly those of the Pacific Basin, or whose fishery industries impinge upon those of the Pacific as competitors or markets, actual or prospective.

- Inclusion of international reports in this 1960 *Yearbook Number* does not displace or supercede the editorial enterprises and standards which for more than half-a-century have made this publication famous in the field of industrial journalism.

Some elements of our traditional content have been condensed in order to make them more readily useful to busy men.

This condensation has made possible the inclusion of much new material, although the broadening of our coverage in the international field has necessitated substantial expansion as well.

In short, the 1960 *Pacific Fisherman International Yearbook Number* is bigger in volume as well as broader in coverage.

- So much for physical change. Now for the thinking and concept which prompted the change—

He is blind indeed who does not recognize that in the years since the close of World War II fishing has become more than ever an international industry; and

He is dull who does not sense that this broadening, this extension of international interest, will continue to grow.

These truths have been evident for some time, and were voiced years ago in *Pacific Fisherman's* slogan:

"Fishing is a World Industry; and the Pacific Alone is Half the World."

More than ever before, fishery products move in international trade—and not alone as finished goods for consumption in countries without productive sea coasts and the ability to provide their own needs.

Today refrigeration makes it possible for nations having access to productive seas, or having special skills and abilities, to furnish raw materials or partly-finished materials for completion in other countries with established markets, and perhaps with distinctive preferences in preparation and packing.

In August, 1947, *Pacific Fisherman* published a study of the Pacific potential in a special issue under the title:

"Who Will Harvest the Pacific?—An Outline for Venture, bv Fishermen and Business, on the Oceanic Frontier."

- In the years since we raised this question nations have been providing the answer, and proving that venture and pioneering, relying on the new technologies, can fish horizons and earn profits undreamed of in 1947.

It is to record the achievements of this venturing by nations of the world, to report their production from the sea and their trade in its goods, that *Pacific Fisherman* today proudly introduces its 1960 *International Yearbook Number*.

We have not sought in it to report upon the industrial fisheries of *all* nations of Earth; but primarily upon those around the Pacific Rim, or related to the fisheries of the Pacific by the kinship of markets, of competition, of corporate interest, of geography and biology.

- Thus the term *International* is added to the name of this *Yearbook Number*.

Thus this journal of the industry changes with the industry, its interests, its point of view, its field of business.

Here are the traditional data which for 56 years have identified the *Pacific Fisherman Yearbook Number* and kept it unique in industrial journalism, plus a broader look at international fishing, from which come orders for goods and products, competition, raw materials, ideas, and promise for the future.

- *Fishing is a World Industry; and the Pacific Alone is Half the World.*

INTERNATIONAL FISHERIES

1959-1960

• International character of ocean fisheries was emphasized in 1959, written throughout the world in letters of unmistakable meaning.

As 1960 opens that emphasis continues, with Geneva the first point of focus. There in March nations consult again, grappling with the perplexing question of (1) how far a nation's sovereignty properly should extend seaward from its shores; and (2) the rational rights of coastal nations in the control of fisheries in the ocean contiguous to their territorial seas.

Out of Geneva 1960 may come determinations which will shape, or re-shape, the pattern of ocean fisheries for generations to come.

If there is a departure from the long-standing doctrine of the narrow territorial sea it will result basically from the increasingly international character of ocean fisheries, the subject of this writing, and the theme of this *International Yearbook*.

Thus the nations whose fleets range most widely favor the narrowest seaward extension of territorial waters of coastal states.

Countries concerned primarily with the fisheries in seas closely contiguous to their coasts seek exclusive rights therein for their own fishermen, and thus favor sovereignty over a broad belt of ocean beyond the limits of their land.

And there is a third trend in thinking which maintains that under certain circumstances privileges may be *earned* beyond the narrow limits of the territorial sea. Such circumstances include: long-established fishery in waters which during that period were high seas; conservation of species which, propagated, reared and protected in interior or coastal waters of a state, in a period of their life history pass into international waters; long-practiced conservation based on scientific study, whose findings are employed in the administration of sustained-yield fishing for a fully-exploited species.

As ocean fish swim in international seas; as fish products pass in international trade; so the problems of use and protection of ocean fisheries become matters for international thought today, in 1960.

• International approach to fishery problems took a new turn in the early fall of 1959 when delegations representative of the governments of Japan and the United States, supported by advisory groups from the tuna industries of those countries, probed thoughtfully and painstakingly into the frictions and difficulties interfering with the full flow of economic benefit for both countries from the tuna resource of which they are at once the principal producers and consumers.

The American tuna industry again in 1959 was concerned with the decrease in domestic catch of tuna, resulting primarily from unprofitable markets, while imports of frozen tuna for canning in the United States rose sharply.

Thus in 1959 the U. S. domestic tuna catch declined by 24 million pounds. At the same time the imports of frozen tuna in the first 11 months of the year were 213 million pounds, compared with 179 million for the same period of 1958. Further, in these 11 months of 1959 imports of frozen loins and discs were 7.4 million pounds as against 4.3 million in 1958.

In 1959 the live weight of fishery products imported into the United States exceeded 3 *billion* pounds, being 37.4% of the total United States supply.

Nearly 43% of the United States supply of edible fishery products in 1959 was derived from imports.

• These are matters of particular concern in an *International Yearbook*.

Their implications are suggested by world fish catch data for the period from 1950 through 1958 —

In that period the catch of the United States increased only 1%.

Other North American countries increased their aggregate catch 9%.

European catch, with that of the U.S.S.R. not included, was up 23%.

Increase in the catch of the Soviet Union was reported as 61%.

African nations gained 82%.

Asia, not including the U.S.S.R., advanced 129%.

In these nine years the catch of South American countries gained 181%.

This great gain of South America was contributed largely by Peru; and, remember, it does not include that country's prodigious catch of 1959.

Remember also that Peru is prepared to double its present productive capacity in 1960; that Chile, with its enormous coastline and rich fishery potential, is entering a new phase of industrial fishery growth; that Argentina and Brazil, the two largest countries of South America, also are turning to the development of their ocean resources.

• *The prospect shines with promise.*

OPERATING PLANTS IN ALASKA

HAWK INLET

FALSE PASS

SALMON

● Salmon prospects in the North Pacific in 1960 and the years next beyond vary widely in promise, with little of certainty save that they will be *interesting* and the circumstances accompanying them of vital importance to the longer future.

After lean and variable years, Bristol Bay in 1960 faces the *possibility* of a rich Red salmon run. *If* it comes, the salmon industry will be pressed to cope with it, and the Alaska State Department of Fisheries will enter upon its first year of full authority face-to-face with a staggering problem in administration, conservation and wise-use-without-waste.

The salmon resource of Asian origin, by Soviet report, is threatened by reduced spawning. If events support this belief, the coming years may see further decline of salmon supplies.

In British Columbia and the Pacific states other than Alaska the prospect for 1960 bears little promise, being the off-year for Pinks and the lowest of the Fraser Sockeye cycle. The succeeding two years should be excellent.

Transition in Alaska from Federal to State control presents problems for the operators as well as the administrators. With traps eliminated, with new philosophies of management, with new technologies available, salmon fishermen and canners alike are face-to-face in 1960 with a new challenge.

● North American canned salmon production in 1959 was at the lowest level since 1900 when the industry began to assume normal stature.

Weakness of the Alaska resource, particularly in Pinks and Chums, was primarily responsible for the year's poor showing. In both of these species the territory's production was the smallest since 1921, which was a year of economic disaster rather than biologic.

With a pack only a little over 1,600,000 cases, against an average of 3,347,000 cases for the preceding 10 years, Alaska's output was scant indeed.

Reds, supported by the remarkable run to the Nushagak, actually showed a good gain over the preceding year—where all other species fell back; but the 528,000 cases of Reds packed were far below the 10-year average of 991,000 cases.

Alaska Pinks were the most dismal part of the picture in the new state, with the pack of 580,000 cases the smallest in history, less than half the weak 1,426,000-case 10-year average.

Chums also, with not a lot more than 380,000 cases, were only a little better than half the 1-year average.

● North American salmon prospects for 1960 present varied promise, regionally ranging from bright to dark.

Moreover, opinions of highly qualified observers and analysts show striking disagreement in some of the forecasts.

This is especially true with respect to the Red salmon run to Bristol Bay, where the Fisheries Research Institute of the University of Washington has ventured a prediction that a "run of more than 30,000,000 Red salmon should be expected in Bristol Bay next year."

The only qualification tagged to this courageous forecast is "if the Japanese catch (of Red salmon of North American origin) is small."

Actually, the forecast of the F.R.I.

1959 - Pacific Canned Salmon Packs and Values

DISTRICT	RED, SOCKEYE or BLUEBACK		PINK		CHUM		SILVER or COHO		KING or CHINOOK & STEELHEAD		TOTAL	
	Cases	Value	Cases	Value	Cases	Value	Cases	Value	Cases	Value	Cases	Value
Alaska	528,768	$19,564,416	580,679	$13,936,296	380,309	$ 7,996,489	77,053	$ 2,465,696	34,077	$1,090,464	1,600,886	$ 45,053,361
Washington	131,453	6,309,744	175,318	4,207,632	126,166	2,649,486	73,446	2,790,948	14,522	653,490	520,905	16,611,300
Oregon	15,126	756,300	---	----	6,219	130,599	11,590	440,420	64,619	3,230,950	97,554	4,558,269
Total U.S.A.	675,347	26,630,460	755,997	18,143,928	512,694	10,776,574	162,089	5,697,064	113,218	4,974,904	2,219,345	66,222,930
British Columbia	266,554	11,994,930	458,229	10,997,496	133,973	2,813,433	214,029	9,133,102	17,014	595,490	1,089,799	35,534,451
GRAND TOTAL	941,901	$38,625,390	1,214,226	$29,141,424	646,667	$13,590,007	376,118	$14,830,166	130,232	$5,570,394	3,309,144	$101,757,381

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was based on two entirely different sets of data. From one the Institute arrived at a combined forecast for the 1960 Bristol Bay run of 34,400,000 Reds. The other set of data produced an estimate of 46,000,000 fish.

After allowing for a Japanese catch on the order of that taken from the North American stocks in 1958 and 1959, the F.R.I. settled for a prediction of "more than 30,000,000."

- Fisheries Research Institute predictions were much more optimistic than those of the United States Bureau of Commercial Fisheries, reached on the basis of substantially different data.

At the same time, the 1960 fishing regulations of the Alaska Department of Fish and Game established gear limits for Bristol Bay operations which would appear to make it difficult to harvest a run of the magnitude expected by the Fisheries Research Institute.

With the gear units permissible for a 2.5-day fishing week set at 275 for Naknek-Kvichak, 225 for Nsuagak, 60 on the Egegik and 35 on the Ugashik, the salmon industry was faced with a grave gamble.

Should it undertake to limit gear to this level and fish 2.5 days per week, with the possibility that a big run such as that visualized by the F.R.I. might occur, and much of it go to waste?

Or should the industry mount a larger volume of gear, which would force the fishing week down to one day, on the gamble that a big run would come and that the restriction on fishing time would be lifted by the Alaska Fish and Game Board?

The dilemma faced by the industry is a grave one, complicated of course by complete lack of knowledge as to where the Japanese high seas gillnets will be fished, and how heavily they will bear upon the population of salmon native to North America.

NORTH AMERICAN CANNED SALMON PACK

Year	Red, Sockeye or Blueback	Pink	Chum or Keta	Medium Red Coho or Silverside	King or Chinook	Steelhead Trout	Total Cases	Year
1898	1,594,162	109,399	51,530	282,589	398,564	26,277	2,462,521	1898
1899	2,153,388	401,892	61,932	261,071	334,974	11,994	3,225,251	1899
1900	2,046,908	232,022	155,208	208,026	338,493	20,597	3,001,254	1900
1901	3,801,730	585,017	86,230	126,535	455,395	20,000	5,074,907	1901
1902	2,702,045	549,602	313,603	227,031	379,641	8,593	4,180,515	1902
1903	2,231,555	564,507	61,232	330,319	403,836	7,251	3,598,700	1903
1904	1,950,949	299,333	168,235	168,235	444,472	9,868	3,041,092	1904
1905	3,488,322	253,559	138,642	269,806	443,794	9,822	4,603,945	1905
1906	2,122,204	416,602	450,151	397,346	424,974	6,500	3,817,777	1906
1907	1,707,813	1,114,100	272,135	397,786	354,209	6,604	3,852,647	1907
1908	2,186,325	726,656	303,837	386,745	379,171	11,863	3,994,597	1908
1909	3,671,555	882,410	218,987	373,567	262,554	17,382	5,426,455	1909
1910	2,274,780	589,043	555,908	521,966	372,901	5,576	4,320,174	1910
1911	1,869,927	2,373,595	592,790	676,141	627,714	8,618	6,104,887	1911
1912	2,544,435	1,556,128	808,630	621,817	426,338	7,198	5,956,953	1912
1913	4,643,425	2,392,166	432,812	300,033	285,472	9,539	8,063,447	1913
1914	3,121,964	1,222,013	1,200,433	579,980	509,100	11,292	6,644,782	1914
1915	2,492,865	2,825,570	1,107,707	551,821	641,979	29,650	7,639,592	1915
1916	2,432,048	2,036,077	1,500,332	715,815	646,341	24,999	7,355,612	1916
1917	3,248,843	3,929,332	1,648,313	588,749	673,980	35,677	10,124,894	1917
1918	2,987,710	2,953,245	2,175,031	838,088	697,140	41,086	9,692,300	1918
1919	1,707,846	2,426,414	2,367,481	793,175	704,195	24,392	8,023,503	1919
1920	1,892,691	2,138,959	1,175,001	361,566	705,050	16,054	6,289,321	1920
1921	2,034,310	1,038,090	359,947	362,943	419,508	11,362	4,226,160	1921
1922	2,480,811	2,241,760	908,283	510,919	353,588	26,640	6,522,001	1922
1923	2,309,142	3,371,917	1,120,591	534,225	389,802	27,757	7,753,434	1923
1924	1,902,832	3,295,739	1,835,251	542,682	406,096	31,270	7,990,543	1924
1925	1,581,792	3,111,320	1,803,371	667,817	550,071	17,248	7,731,610	1925
1926	2,550,771	4,101,422	1,762,134	607,778	485,783	86,233	9,544,126	1926
1927	1,738,054	2,241,304	1,217,338	642,522	538,574	33,377	6,411,169	1927
1928	2,214,498	3,583,433	2,165,652	602,203	354,798	17,492	8,938,076	1928
1929	2,100,787	3,775,764	1,541,213	564,826	375,497	24,821	8,382,908	1929
1930	1,710,018	4,266,301	1,085,351	758,451	427,282	18,509	8,265,912	1930
1931	2,084,385	3,890,755	671,574	388,140	418,483	13,679	7,467,016	1931
1932	2,484,459	2,341,966	1,313,537	446,706	394,830	14,386	6,995,884	1932
1933	2,579,891	3,259,341	1,021,547	402,107	343,442	19,486	7,625,814	1933
1934	3,354,863	4,261,262	1,362,905	596,951	352,752	16,183	9,944,916	1934
1935	1,232,852	4,139,114	1,303,216	596,117	279,693	15,484	7,566,476	1935
1936	2,968,184	5,181,954	1,846,675	533,285	313,795	20,350	10,864,243	1936
1937	2,494,302	4,532,487	1,233,999	369,916	385,986	18,412	9,035,372	1937
1938	3,125,176	3,623,435	1,387,245	595,380	234,520	16,283	8,982,039	1938
1939	2,280,088	3,412,392	1,054,858	472,239	254,930	26,090	7,500,597	1939
1940	1,402,999	3,124,292	1,553,389	592,395	286,485	34,443	6,994,003	1940
1941	1,763,852	5,218,427	1,770,225	831,279	422,989	36,597	10,043,369	1941
1942	1,860,044	3,088,724	1,723,193	616,687	343,369	26,507	7,658,524	1942
1943	2,169,091	2,913,760	1,258,239	377,160	196,000	19,357	6,933,608	1943
1944	1,869,365	2,478,750	1,239,548	383,040	223,088	23,143	6,216,934	1944
1945	1,556,200	3,374,192	1,041,387	457,680	194,056	22,125	6,645,640	1945
1946	1,893,469	2,176,817	1,267,478	316,968	230,811	21,880	5,907,423	1946
1947	2,197,569	2,962,281	1,127,496	438,087	366,620	25,325	7,117,378	1947
1948	1,994,733	1,630,411	1,551,190	577,726	354,475	26,027	6,134,562	1948
1949	1,335,248	3,946,309	946,615	492,871	229,031	11,305	6,961,380	1949
1950	1,698,290	1,544,327	1,816,745	468,768	215,114	13,777	5,757,022	1950
1951	1,364,419	2,737,445	1,443,330	779,725	258,530	18,517	6,601,966	1951
1952	1,862,844	1,850,890	1,375,214	461,629	168,150	22,763	5,741,490	1952
1953	1,672,714	2,189,770	1,359,134	317,314	170,614	22,369	5,731,915	1953
1954	2,004,548	1,486,676	1,910,330	343,203	144,013	17,113	5,905,883	1954
1955	994,186	2,505,415	591,190	394,529	194,414	15,327	4,695,061	1955
1956	1,502,650	1,492,979	961,769	406,486	177,628	9,425	4,550,937	1956
1957	1,192,018	1,695,172	1,164,082	421,468	152,547	8,730	4,634,017	1957
1958	2,028,120	2,005,543	1,141,108	283,102	147,900	7,526	5,613,299	1958
1959	941,901	1,214,226	646,667	376,118	122,360	7,872	3,309,144	1959
10 Yr. Average	1,323,970	1,872,244	1,240,957	425,234	175,127	14,341	5,254,073	10 Yr. Average

NOTE:- Figures represent full cases of 48 lbs. net. "Average" is for the last ten years.

Figures for the last year shown are from PACIFIC FISHERMAN's compilation; those for previous years are official totals.

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1959-PACIFIC CANNED SALMON PACK

(Figures reduced to uniform basis of 48-lb. cases.)

Species	Alaska	Puget Sound	Columbia River	Coastal Areas	Total U.S.	British Columbia	GRAND TOTAL
Red or Sockeye	528,768	130,246	16,313	20	675,347	266,554	941,901
Pink	580,679	175,318	---	---	755,997	458,229	1,214,226
Chum or Keta	380,309	122,586	8,949	850	512,694	133,973	646,667
Coho or Silver	77,053	71,688	12,521	827	162,089	214,029	376,118
Chinook or King	34,077	7,510	63,719	40	105,346	15,760	121,106
Steelhead	---	---	7,872	---	7,872	1,254	9,126
TOTAL	1,600,886	507,348	109,374	1,737	2,219,345	1,089,799	3,309,144

Pack of Alaska Canned Salmon by Species and Values

Salmon fishing in Alaska commenced in 1878, but no segregation of the packs by species is available prior to 1896, while the valuations were not recorded prior to 1905. Earlier total packs, starting with 8,159 cases in 1878, ranged from 6,539 cases in 1880 to a peak of 801,400 in 1891, the output in 1895 being 626,530 cases. The average from the beginning through 1895 was 291,973 cases.

Values are based on opening prices, or on prices at which the bulk of the packs were sold.

YEAR	RED, SOCKEYE		PINK		CHUM		COHO		KING		TOTAL		YEAR
	Cases	Value	Cases	Value	Cases	Value	Cases	Value	Cases	Value	Cases	Value	
1896	806,010	..	111,986		452	..	37,017	..	11,242	...	966,707	...	1896
1897	688,581	...	157,711	.	1,396	..	43,557	..	17,833	...	909,070	..	1897
1898	782,941	..	109,399	..	5,184	..	54,711	...	12,862	...	965,997	..	1898
1899	864,254	..	149,159	..	1,931	...	39,402	...	23,400	...	1,078,146	...	1899
1900	1,197,406	.	232,022	..	30,012	...	50,984	..	37,715	...	1,548,139	..	1900
1901	1,319,335	..	541,427		47,464	.	65,509	...	43,069	...	2,016,804	...	1901
1902	1,685,546	..	549,602		159,849	.	82,723	...	59,104	...	2,536,824	...	1902
1903	1,687,244	..	355,799		35,052	..	120,506	...	47,609	...	2,246,210	...	1903
1904	1,505,548	...	299,333	..	21,178	...	85,741	...	41,956	...	1,953,756	...	1904
1905	1,574,428	$5,335,547	168,579	$498,194	41,972	$113,056	67,394	$215,875	42,125	$141,999	1,894,516	$6,304,671	1905
1906	1,475,961	5,620,875	348,875	1,046,951	254,812	730,235	109,141	382,109	30,834	116,222	2,219,044	7,896,392	1906
1907	1,295,113	5,915,227	561,973	1,799,290	184,173	547,757	85,190	337,384	43,424	181,718	2,169,873	8,781,366	1907
1908	1,651,770	7,524,251	644,133	1,733,379	218,513	554,197	68,827	274,089	23,730	99,867	2,606,973	10,185,783	1908
1909	1,705,302	7,610,550	464,873	1,114,839	120,712	274,110	56,556	231,029	48,034	207,624	2,305,477	9,438,151	1909
1910	1,450,267	7,774,390	554,322	1,764,055	254,218	773,409	114,026	559,666	40,221	214,802	2,413,054	11,086,322	1910
1911	1,320,705	8,552,512	1,021,356	4,493,966	303,823	1,215,692	120,704	752,283	45,378	363,024	2,820,966	16,198,833	1911
1912	1,904,258	10,776,987	1,303,365	3,410,928	638,528	1,600,444	170,384	791,023	52,594	310,847	4,060,129	16,890,229	1912
1913	1,964,379	9,136,616	1,402,916	3,687,446	267,654	623,424	77,377	271,078	34,167	140,914	3,746,914	13,859,478	1913
1914	2,201,574	12,482,110	997,823	3,600,075	662,478	2,260,614	157,792	735,219	48,165	281,924	4,067,832	19,719,942	1914
1915	1,922,296	11,907,202	1,870,373	5,619,436	484,408	1,356,469	126,570	588,903	85,694	458,000	4,489,341	19,930,010	1915
1916	2,119,442	13,147,994	1,753,546	6,446,168	715,238	2,434,627	265,184	1,430,143	66,179	364,496	4,919,589	23,823,428	1916
1917	2,484,881	29,058,778	2,298,466	15,120,419	877,713	5,375,713	193,708	1,634,600	67,552	660,868	5,922,320	51,850,017	1917
1918	2,618,559	25,313,837	2,418,212	16,142,604	1,366,859	8,756,598	216,572	2,068,784	57,367	596,000	6,677,569	52,877,823	1918
1919	1,265,543	17,143,017	1,657,434	14,982,542	1,348,462	9,450,772	230,229	2,809,310	90,533	1,131,662	4,592,201	45,552,714	1919
1920	1,475,780	19,851,816	1,613,434	9,751,845	1,022,708	4,712,575	192,311	1,579,963	91,276	1,154,013	4,395,509	37,050,212	1920
1921	1,758,794	16,539,177	440,471	1,938,263	247,606	990,424	109,783	649,480	48,319	352,699	2,604,699	20,470,043	1921
1922	2,075,397	19,719,158	1,657,556	7,709,011	562,496	2,369,396	174,312	949,312	31,604	258,799	4,501,428	31,006,027	1922
1923	1,878,330	17,727,572	2,455,136	12,337,580	527,145	2,542,759	163,752	957,439	38,977	344,078	5,063,340	33,909,428	1923
1924	1,449,724	14,840,946	2,613,068	13,191,793	1,027,183	4,931,172	182,207	1,312,969	33,741	304,809	5,305,923	34,581,689	1924
1925	1,065,290	15,243,243	2,105,240	11,473,271	1,065,395	4,701,847	164,199	1,702,243	50,774	682,235	4,450,898	33,802,839	1925
1926	2,157,087	21,328,739	3,338,349	17,987,527	902,443	4,518,929	202,527	1,700,563	52,476	544,247	6,652,882	46,080,005	1926
1927	1,320,563	16,880,670	1,414,756	8,638,551	507,641	2,761,638	252,629	2,307,569	70,438	853,100	3,566,072	31,441,534	1927
1928	1,944,061	18,902,050	2,785,464	18,512,649	991,504	564,567	297,886	2,140,685	51,195	505,017	6,070,110	45,624,968	1928
1929	1,693,050	19,388,299	2,570,506	15,551,647	860,876	4,659,754	172,070	1,302,887	73,740	769,869	5,370,242	41,672,456	1929
1930	848,787	11,172,954	3,150,652	12,773,894	596,000	2,162,306	329,988	3,011,505	63,560	764,254	4,988,987	29,884,813	1930
1931	1,695,782	16,161,532	2,978,512	10,226,769	536,909	1,726,203	170,208	1,119,332	51,124	462,800	5,432,535	29,696,636	1931
1932	2,104,727	10,803,982	2,116,573	6,368,695	821,128	2,301,408	149,351	606,798	68,709	368,522	5,260,488	20,449,405	1932
1933	2,182,371	14,649,771	2,183,443	10,498,358	658,245	3,028,584	161,633	884,276	41,006	345,310	5,226,698	29,406,294	1933
1934	2,626,002	17,687,617	3,822,602	15,349,445	735,055	2,651,538	235,560	1,197,000	51,367	155,230	7,470,586	37,040,830	1934
1935	823,175	7,216,754	3,254,528	13,767,517	852,730	3,414,160	188,918	1,263,479	36,475	348,024	5,155,826	26,009,934	1935
1936	2,482,555	19,648,482	4,589,270	18,430,508	1,106,983	4,094,532	218,232	1,453,566	57,908	452,125	8,454,948	44,079,213	1936
1937	2,101,154	21,590,206	3,619,298	18,151,343	729,114	3,507,933	135,078	1,096,905	69,394	682,031	6,654,038	45,028,418	1937
1938	2,523,123	19,663,910	3,222,104	12,350,571	786,859	2,848.266	216,732	1,342,715	42,726	341,788	6,791,544	36,547,250	1938
1939	1,971,338	18,560,539	2,509,519	12,656,697	626,412	2,905,286	103,156	708,013	28,036	280,036	5,239,211	35,110,571	1939
1940	953,381	9,402,841	2,908,025	15,770,772	860,539	4,312,766	284,130	2,122,330	22,303	219,742	5,028,378	31,828,451	1940
1941	1,164,888	15,952,391	4,636,649	32,593,271	710,507	4,844,060	356,213	3,595,982	38,246	480,998	6,906,503	57,466,702	1941
1942	912,006	13,804,764	2,818,650	22,565,374	942,789	7,178,696	372,537	4,442,108	43,127	686,567	5,089,109	48,677,509	1942
1943	1,982,175	30,381,755	2,322,057	18,701,467	882,578	6,755,829	158,734	1,937,981	50,965	802,162	5,396,509	58,579,194	1943
1944	1,580,757	24,254,327	2,087,322	16,924,966	985,725	7,565,526	187,053	2,278,938	36,939	584,787	4,877,796	51,608,544	1944
1945	1,173,356	18,260,328	2,239,282	18,201,352	688,485	5,312,578	195,860	2,078,066	41,709	676,640	4,338,692	44,528,964	1945
1946	1,065,898	22,880,873	2,057,121	24,685,452	617,155	7,120,923	193,061	3,231,992	37,874	748,321	3,971,109	58,667,561	1946
1947	1,876,239	45,390,823	1,723,617	32,269,419	500,211	8,983,297	148,715	3,522,434	53,684	1,131,912	4,302,466	91,297,885	1947
1948	1,635,463	44,994,233	1,304,044	31,617,066	774,661	16,345,475	241,799	6,278,595	54,645	1,459,245	4,010,612	100,694,614	1948
1949	967,626	25,504,967	2,682,330	42,921,708	499,226	7,572,386	192,352	4,004,944	50,007	1,258,463	4,391,541	81,262,468	1949
1950	1,166,052	34,211,966	1,095,534	25,663,330	780,684	15,269,095	191,501	5,131,834	54,321	1,550,183	3,288,092	81,826,408	1950
1951	816,831	26,017,227	1,559,748	32,505,086	721,152	10,950,656	345,159	5,131,859	91,425	2,596,635	3,534,315	77,201,463	1951
1952	1,181,162	33,783,498	1,172,168	21,705,200	966,660	15,140,209	197,004	4,201,837	56,970	1,521,732	3,573,964	76,352,476	1952
1953	994,293	27,996,373	955,528	17,439,908	800,882	11,214,236	127,676	2,894,714	56,222	1,442,103	2,934,601	60,987,334	1953
1954	804,194	23,235,032	1,149,422	22,477,095	1,029,295	15,093,798	171,643	3,926,204	52,600	1,407,488	3,207,154	66,139,617	1954
1955	661,607	21,045,719	1,270,303	27,044,751	363,657	6,322,832	114,584	3,056,498	47,818	1,369,984	2,457,969	58,839,784	1955
1956	1,015,558	34,912,265	1,116,769	24,927,897	675,034	12,873,940	95,940	2,763,127	47,053	1,471,651	2,950,354	76,948,880	1956
1957	763,030	26,694,705	713,774	16,600,404	829,816	15,344,031	87,290	2,391,960	47,984	1,533,286	2,441,894	62,564,386	1957
1958	488,354	16,489,687	1,547,651	32,129,387	754,806	12,685,328	101,991	2,686,153	51,778	1,540,728	2,944,580	65,531,283	1958
1959	528,768	19,564,416	580,679	13,936,296	380,309	7,996,489	77,053	2,465,696	34,077	1,090,464	1,600,886	45,053,361	1959
Aver.	843,553	26,395,089	1,116,158	23,442,935	730,230	12,890,061	150,984	3,464,988	54,025	1,552,425	2,893,381	67,144,498	Aver.

NOTE:- Figures for the last year shown are Pacific Fisherman's own compilation from original sources, and include fish canned elsewhere from salmon caught in Alaska. Figures for previous years are from official Fish & Wildlife Service data, to which have been added fish canned elsewhere from fish caught and frozen in Alaska. "Average" is for the last ten years.

Since 1895

KELLEY-CLARKE COMPANY

2460 SIXTH AVENUE SOUTH • SEATTLE 4, WASHINGTON

SELLING AGENTS

CANNED SALMON

NORTHWEST TUNA

DUNGENESS CRABMEAT

KELLEY-CLARKE COMPANY
ESTAB. 1895

PACIFIC SHRIMP

ALASKA KING CRABMEAT

SALMON
Alaska

- The State of Alaska is in control of its fisheries for the first time in this year 1960, which thus becomes the basic milestone in the future history of the resource.

Moreover, the possibility that Bristol Bay may have a rich Red salmon run comparable with the greatest in the past of Alaska's fisheries adds further dash to an immediate future already full of zest.

- Basic change comes to the fisheries of Alaska with 1960, when control over the resource passes to the new state from the federal Department of the Interior.

New faces, new philosophies, but with them the same primary objective of conserving the resource and bringing it back to the productive potential inherent in undamned rivers, unpolluted streams, untouched watersheds and the myriad of lonely lakes.

The new state's first stride toward full control over its fisheries did not wait for 1960 to bring transfer of authority from the federal department. Employing its legislative authority for

1959-WESTERN ALASKA CANNED SALMON PACK

COMPANY	CANNERY LOCATION	RED			PINK	CHUM	COHO	KING or CHINOOK			GRAND TOTAL (full cases)
		1-lb. Talls (etc.)	½-lb. Flats (8 doz.)	Total (full cases)	1-lb. Talls (etc.)	1-lb. Talls (etc.)	1-lb. Talls (etc.)	1-lb. Talls	½-lb. Flats (8 doz.)	Total (full cases)	
Alaska Packers Association	Egegik	12,158	1,410	13,568	--	452	---	88	52	140	14,160
	Ekuk	19,374	---	19,374	--	3,277	374	1,776	---	1,776	24,801
	Naknek	24,624	---	24,624	--	3,328	---	307	---	307	28,259
	Ugashik	20,797	2,409	23,206	--	1,548	---	254	152	406	25,160
American Packing Co.	Dillingham	---	786	786	--	187	7	---	27	27	1,007
	Floater "Kayak" (Naknek)	16,174	---	16,174	--	1,226	---	148	---	148	17,548
Arctic Maid Fisheries	Dillingham	7,321	---	7,321	--	649	47	130	---	130	8,147
Bogler, Henry	Yukon River	---	---	---	--	---	---	672	---	672	672
Columbia Riv. Packers Assn.	Egegik, Ekuk, Naknek	18,039	680	18,719	--	3,607	95	994	6	1,000	23,421
Columbia-Wards Fisheries	Nushagak, Naknek, Egegik	44,082	1,408	45,490	--	5,397	374	2,008	58	2,066	53,327
Egegik Packing Co.	Egegik	12,158	1,408	13,566	--	452	---	87	52	139	14,157
P. E. Harris Co., Inc.	Naknek-Kuichak	4,590	---	4,590	--	619	---	57	---	57	5,266
	Ugashik	6,932	803	7,735	--	516	---	84	52	136	8,387
Nakat Packing Corporation	Nakeen	13,204	1,079	14,283	--	2,686	---	550	3	553	17,522
Naknek Independt. Pkg. Co.	Naknek	---	---	---	--	---	---	---	---	---	---
New England Fish Co.	Dillingham	23,263	--	23,263	--	2,976	173	1,833	---	1,833	28,245
Pacific American Fisheries	Dillingham, Port Moller	39,595	12,332	51,927	25	8,827	4,173	3,404	83	3,487	68,439
Queen Fisheries, Inc.	Nushagek	9,664	17,364	27,028	--	3,321	1,259	2,077	588	2,665	34,273
Red Salmon Company	Naknek	18,067	574	18,641	--	3,604	95	999	3	1,002	23,342
Snake River Packing Co.	Nushagak	---	---	---	--	---	---	---	---	---	---
Yukon Packers	St. Mary's	---	---	---	--	---	---	---	2,490	2,490	2,490
Yukon River Fishermen's Cooperative	Alakanuk	---	---	---	--	---	---	3,358	---	3,358	3,358
TOTAL WESTERN ALASKA		290,042	40,253	330,295	25	42,672	6,597	18,826	3,566	22,392	401,981

Weekly Red Salmon Packs on Bristol Bay

YEAR	FIRST WEEK		SECOND WEEK		THIRD WEEK		FOURTH WEEK		TO CLOSE	TOTAL	YEAR
1940	(July 6)	221,687	(July 13)	139,853	(July 20)	33,848	(July 28)	4,606	. . .	399,994	1940
1941	(July 5)	204,929	(July 12)	206,049	(July 19)	127,573	(July 28)	31,316	. . .	569,867	1941
1942	(July 4)	149,175	(July 11)	142,145	(July 18)	93,174	(July 25)	44,323	7,357	436,174	1942
1943	(July 3)	284,635	(July 10)	449,076	(July 17)	272,074	(July 24)	242,122	27,174	1,275,081	1943
1944	(July 8)	431,421	(July 15)	347,149	(July 22)	116,514	(July 29)	18,045	. . .	944,129	1944
1945	(July 7)	236,413	(July 14)	233,332	(July 21)	84,681	(July 28)	15,405	. . .	569,831	1945
1946	(July 6)	241,948	(July 13)	241,405	(July 20)	88,520	(July 27)	30,831	. . .	602,704	1946
1947	(July 5)	641,401	(July 12)	376,575	(July 19)	242,854	(July 26)	70,975	3,226	1,335,031	1947
1948	(July 3)	482,252	(July 10)	464,488	(July 17)	169,806	(July 24)	112,111	7,680	1,236,226	1948
1949	(July 2)	260,145	(July 9)	142,637	(July 16)	86,865	(July 23)	30,675	3,581	523,903	1949
1950	(July 1)	93,006	(July 8)	370,340	(July 15)	89,070	(July 22)	10,832	411	563,659	1950
1951	(June 30)	59,185	(July 7)	127,553	(July 14)	73,692	(July 21)	59,143	. . .	319,573	1951
1952	(June 28)	92,073	(July 5)	228,069	(July 12)	256,014	(July 19)	119,729	21,618	712,503	1952
1953	(June 27)	63,478	(July 4)	191,378	(July 11)	127,590	(July 18)	51,229	9,382	443,057	1953
1954	(July 3)	116,428	(July 10)	97,034	(July 17)	75,381	(July 24)	17,230	1,396	307,469	1954
1955	(July 2)	73,936	(July 9)	142,358	(July 16)	86,500	(July 23)	8,469	2,369	313,632	1955
1956	(June 30)	32,826	(July 7)	121,942	(July 14)	266,146	(July 21)	103,065	7,121	531,100	1956
1957	(June 29)	57,403	(July 6)	134,668	(July 13)	223,727	(July 20)	40,512	7,996	464,306	1957
1958	(June 29)	47,190	(July 6)	168,587	(July 20)	38,942	(July 20)	46,076	15,668	316,463	1958
1959	(June 28)	10,960	(July 5)	89,309	(July 12)	120,755	(July 19)	87,096	23,843	331,963	1959

Compiled from U.S. Fish & Wildlife Service preliminary statistics, and include only salmon canned in that area.

'Figures in first column of table are for the total pack (in full cases of 48 lbs. net) to dates shown; those following show weekly packs.

PARKS CANNING CO., INC.

and

WESTERN FISHERIES COMPANY

Offices — 309 Colman Building
Seattle 4, Washington

Canneries — Kodiak and Cordova, Alaska

Products — Top Quality Alaska and
Copper River Salmon

Represented by

CHOICE NORTH PACIFIC SEAFOODS

PACKED with care for those who appreciate *quality!* Only the finest seafoods, taken from icy North Pacific waters, bear North Pacific's labels (listed below, right). A quality array of finer flavored, nutritious seafoods that mean *repeat* sales.

CANNED SALMON: Copper River Chinook and Sockeye; Alaska Reds, Cohoe, Pinks and Chums; Puget Sound and Columbia River Salmon. Packed 48, ½-lb. flats and 48, 1-lb. talls.

CANNED CRABMEAT: Fancy pack Dungeness and King varieties. Canned in 48, ½-lb. flats, 24, ½-lb. flats.

★

NORTHWEST TUNA

LABELS:

RED SOCKEYES—Royal Red
MEDIUM REDS—Silver Pride
PINKS—Sno-Time & Royal Pink
CHUMS—Sno-Tip

CRABMEAT
RAZOR CLAMS Royal Red

TUNA—Royal Red
—Sno-Tip

North Pacific Seafoods

312 COLMAN BUILDING • SEATTLE 4, WASHINGTON
MUtual 2-1011 R. S. Ennis, Jr., Manager

WESTERN ALASKA CANNED SALMON PACKS

BRISTOL BAY AND YUKON (Cases)						YEAR	ALASKA PENINSULA, NORTH SIDE (Cases)						GRAND TOTAL
Reds	Pinks	Chums	Cohoes	Kings	TOTAL		Reds	Pinks	Chums	Cohoes	Kings	TOTAL	
1,588,008	....	24,559	1,456	9,197	1,623,220	1933	26,665	...	1,490	...	284	28,439	1,651,659
1,726,769	1,959	32,222	1,219	8,580	1,770,759	1934	87,379	...	974	...	217	88,570	1,859,329
231,014	....	6,995	223	660	238,892	1935	34,920	4	2,862	...	175	37,961	276,853
1,388,776	30,773	25,045	1,571	4,092	1,450,257	1936	38,930	293	1,511	...	214	40,948	1,491,205
1,421,369	....	29,286	138	6,897	1,457,690	1937	55,315	1	6,170	...	234	61,720	1,519,410
1,772,885	....	54,551	345	5,446	1,833,227	1938	73,942	...	5,063	...	1,053	80,058	1,913,285
1,059,181	....	88,272	....	5,038	1,152,491	1939	56,310	2	6,478	...	465	63,255	1,215,746
402,899	16,081	30,624	1,445	3,504	454,553	1940	56,158	...	4,914	...	79	61,151	515,704
577,024	9	50,901	3,436	5,785	637,155	1941	36,366	95	4,953	...	179	41,593	678,748
438,053	8.564	16,749	2,638	7,001	473,005	1942	....	...	....	...	...	....	473,005
1,275,212	.....	37,757	180	11,826	1,324,975	1943	39,330	54	3,680	...	56	43,120	1,368,095
954,694	3,911	31,838	2,408	5,420	998,271	1944	31,849	130	12,855	...	21	44,855	1,043,126
576,318	....	66,888	3,105	9,478	655,789	1945	32,342	127	25,007	...	22	57,498	723,287
628,240	4,073	36,436	2,663	10,768	682,180	1946	27,821	...	1,798	...	167	29,786	711,966
1,335,031	....	35,802	1,866	13,737	1,386,436	1947	25,675	...	6,047	8	71	31,801	1,418,237
1,212,233	3.148	64,167	4,140	13,576	1,297,264	1948	65,961	101	17,474	1,220	310	85,066	1,382,330
525,309	....	33,345	2,214	13,795	574,663	1949	10,612	...	2,954	2,349	179	16,094	590,757
577,158	1,607	16,588	2,840	13,217	611,410	1950	10,335	2	18,294	4,098	158	32,887	654,162
309,936	....	15,744	4,366	15,086	345,132	1951	29,656	75	9,777	3,637	242	43,387	388,519
715,083	1,339	31,457	1,661	19,236	768,776	1952	14,477	...	7,379	6,031	123	28,010	796,786
443,137	1	36,921	78	20,319	500,456	1953	17,391	1,175	9,157	3,301	396	31,420	531,876
307,469	4,441	31,694	1,630	8,453	353,687	1954	12,352	5,103	7,308	3,387	510	28,660	382,347
313,962	....	20,413	998	13,187	348,560	1955	20,508	91	2,266	550	474	23,889	372,449
531,100	3,918	24,178	4,130	9,357	572,683	1956	48,661	...	6,530	258	547	55,996	628,679
464,306	....	23,982	4,053	28,695	521,036	1957	20,192	2	7,160	1,025	455	28,834	549,870
242,440	62,229	35,088	10,583	24,836	375,176	1958	36,694	7	9,618	2,443	1,412	50,174	440,199
332,385	6	42,320	2,570	17,118	394,399	1959	43,368	47	7,241	312	1,773	52,741	460,988
943,140	7,354	27,839	3,291	16,950	479,132	Aver.	25,363	650	8,473	2,504	609	37,600	520,588

NOTE: Figures are based on U.S. Fish & Wildlife Service final data, which DO NOT include fish caught in these areas and canned elsewhere, and accordingly are somewhat different from those in other tables compiled independently by PACIFIC FISHERMAN. Figures for the latest year shown are preliminary. "Average" figures are for last ten years. Bristol Bay totals and Grand totals include fish packed in Yukon-Kuskokwim district.

the first time, Alaska early in 1959 prohibited the operation of salmon traps in any of the waters over which the state has jurisdiction. Supplementing this, the Secretary of the Interior closed all save certain Indian-owned traps under 1959 regulations.

Surviving court tests through the first months of the year, the law was sustained and effectively brought to a close the history of salmon trap operation in all American territory, for Alaska was the last stand of this form of fixed fishing gear.

True, there was a surviving remnant of the salmon traps in 1959—and it may continue as a minor and privileged exception. This traces to the special rights granted Indian tribal communities, and particularly those conferred by Congress in its reservation of Annette Island to the Metlakatla Community. Legal test of the right of the Indian tribal groups to use such fishing gear as they may wish in their reservations continues under legal test into 1960.

In the Wake of the Traps

- State control of the Alaska fisheries will bring many changes from the old pattern—have already brought some, and indicated others.

New regulations produced by the Alaska Fish and Game Board follow the method of the federal authority broadly, but with several significant differences. First of these as an indicator of future trends is the evident policy of favoring Alaska residents under the regulations. Another tends to extend formerly existing limitations of size of boats and types of gear.

Elimination of salmon traps renders inevitable changes in operation and organization, and the long-range build-up of the fishing fleet to compensate for reduction of fishing capacity with

BRISTOL BAY SALMON PACKS

(Based on preliminary data, not identical with final figures shown in some other tabulations.)

YEAR	NUSHAGAK	NAKNEK-KVICHAK	EGEGIK	UGASHIK	TOTAL	YEAR
1940	166,208	26,786	16,435	....	450,229	1940
1941	172,835	417,564	29,894	3,555	623,848	1941
1942	196,671	222,281	....	48,239	467,191	1942
1943	282,100	958,144	....	78,110	1,318,354	1943
1944	270,034	588,414	44,113	80,241	982,802	1944
1945	222,738	351,638	....	67,577	641,953	1945
1946	151,216	424,904	22,671	48,534	647,325	1946
1947	220,181	1,015,246	73,422	63,408	1,372,369	1947
1948	262,581	829,407	96,488	127,692	1,316,168	1948
1949	79,173	346,287	84,294	53,266	563,020	1949
1950	115,019	345,587	59,992	65,957	586,555	1950
1951	31,143	239,289	43,590	25,090	339,112	1951
1952	81,720	600,009	52,277	21,594	755,600	1952
1953	36,544	342,266	63,818	45,455	488,083	1953
1954	51,446	149,730	59,872	92,639	353,687	1954
1955	85,573	208,096	39,202	15,689	348,560	1955
1956	106,943	354,560	73,328	37,852	572,683	1956
1957	78,587	336,236	63,330	30,531	508,684	1957
1958	176,690	125,505	36,934	36,047	375,176	1958
1959	182,466	129,408	82,525	....	394,399	1959

NOTE:- The above table covers fish canned in the district; and does not include fish frozen on Bristol Bay and subsequently canned elsewhere.

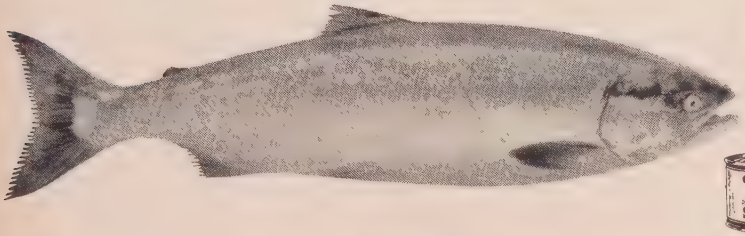
The Five Salmon Go to Market with OCEANIC

OUR BRANDS

CHINOOK

Springkist Fancy Columbia River Chinook
Springkist Alaska Red Chinook

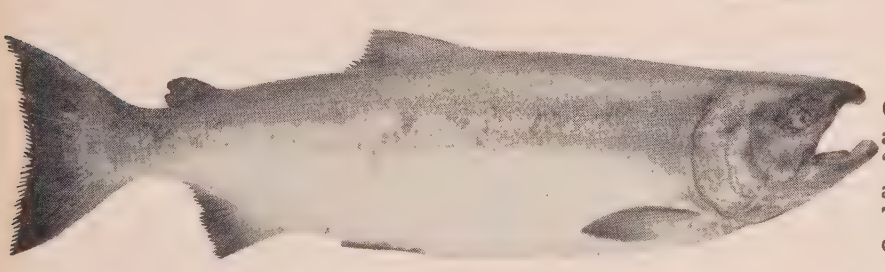
Called "King" in many areas, the big salmon above well deserves the name. This salmon is highly favored, although he furnishes only a limited part of the canned salmon pack. Weight averages about 25 pounds, but Chinooks above 100 pounds have been taken.



RED

Red-E-Lunch
Coatarms
Hummer

"Sockeye" in some areas, this trim salmon averages 7 pounds weight. Yielding the Red salmon pack, it is one of the world's most important fishes.



SILVER

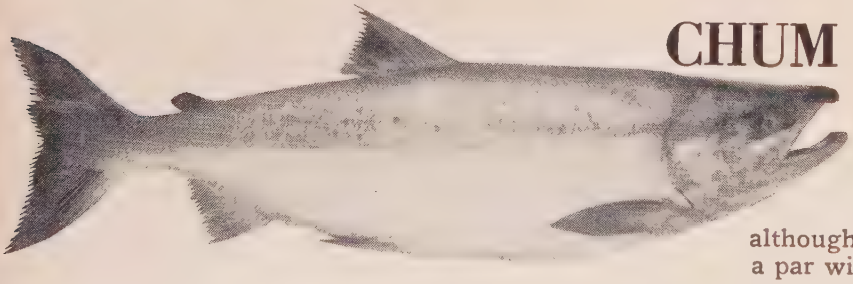
Redman
Salad

Commonly known as "Coho" and "Medium Red" as well as "Silver," this species averages about 8 pounds in weight. The flesh has a strong red color.

PINK

Oceanic
Down South
Seafed
Seafarer

Although the smallest of the five salmon, the Pink makes the largest contribution of all to the canned salmon pack. The species' life cycle is two years.



CHUM

Tomah
Overland
Ben Hur
Western Star
Tennis

The pale color of its flesh keeps the Chum salmon cheap, as consumer preference for color in canned salmon has powerful leverage. Although pale, although cheap, this salmon ranks on a par with the others in nutritive value.

OCEANIC SALES COMPANY

33rd FLOOR SMITH TOWER SEATTLE 4, WASHINGTON MAin 2-6870

the passing of the traps.

Alaska's elimination of fixed gear naturally conferred upon mobile gear the full privilege of the harvest; and this in turn called for fullest employment of that mobility. Alaska fishermen wanted to go to Puget Sound for the best seasons there; and Alaska canneries wanted Washington boats to move north as occasion offered.

Provision for "homes" for boats in both states brought about a number of alliances and corporate changes in 1959. These included the merger of the Fidalgo Island Packing Co. in Southeast Alaska and the Burk Canning Co. on Puget Sound. The Fishermen's Packing Corporation of Anacortes, Wash., consummated an arrangement with the Annette Islands Canning Co. of Metlakatla. Operators with plants in both areas found the arrangement particularly beneficial as a means of providing facilities attractive to fishermen.

Changes in Handling Due

- Up-grading of fish-handling facilities and methods better to serve the seine and gillnet fleets is demanded by considerations of quality. This is being reflected in additional chilled sea water tenders and cannery holding tanks; and in the employment of antibiotics to supplement refrigeration in maintaining freshness of fish for canning.

Here it must be admitted that early applications showed that modern facilities and methods cannot be relied upon indefinitely; and that sea water refrigeration and antibiotics should be employed to market *better* fish, rather than *older* fish.

Cannery Re-Alignments

- Year 1960 and Beyond in the Alaska fisheries offer a stirring challenge to the vigor and virility of companies. Some who had relied long on traps quickly withdrew from the field. One of the largest factors in the Alaska fisheries—Libby, McNeill & Libby—in the spring of 1959 sold its interests and closed its salmon producing activities of more than a half-century. The firm remains as a leading factor in salmon sales and merchandising nonetheless.

Size and age, however, were not in 1959 characteristic of caution and an unwillingness to change. Alaska Packers Association, one of the monumental Alaska companies, acquired the G. P. Halferty properties. Columbia River Packers Association, Inc., with Wards Cove Packing Co. shared equally in the purchase of the Libby canneries through their C.W.C. Packing Co.

1959 - CENTRAL ALASKA CANNED SALMON PACK

COMPANY	CANNERY LOCATION	RED or SOCKEYE			PINK			CHUM			COHO			KING or CHINOOK			GRAND TOTAL (full cs.)
		1 & 4 lb. Talls & Flats	1/2-lb. Flats (8 doz.)	TOTAL	1 & 4 lb. Talls & Flats	1/2-lb. Flats (8 doz.)	TOTAL	1 & 4 lb. Talls & Flats	1/2-lb. Flats (8 doz.)	TOTAL	1 & 4 lb. Talls & Flats	1/2-lb. Flats (8 doz.)	TOTAL	1 & 4 lb. Talls & Flats	1/2-lb. Flats (8 doz.)	TOTAL	
Alaska Packers Assn.	Cordova	4	6,380	6,384	2	12	14	---	---	---	5,028	975	6,003	---	769	769	13,170
	Chignik	10,617	5,320	15,937	1,706	---	1,706	8,224	---	8,224	23	-	23	112	--	112	26,002
	Kodiak Island	5,620	--	5,620	25,816	---	25,816	14,695	---	14,695	86	---	86	170	---	170	46,387
Alaska Year Round Canneries	Port Graham	491	476	967	356	298	654	1,724	153	1,877	121	86	207	1	5	6	3,711
Arctic Maid Fisheries	Kodiak	--	--	---	---	---	---	---	---	---	1,446	---	1,446	---	---	--	1,446
Berman Packing Co.	Ninilchuk	--	4,858	4,858	24	286	310	1,026	1,151	2,177	243	174	417	59	7	66	7,828
Chignik Fisheries Co.	Chignik	10,126	4,636	14,762	2,498	---	2,498	12,716	---	12,716	88	---	88	22	---	22	30,086
Columbia-Wards Fisheries	Kenai	4,284	4,228	8,512	73	---	73	3,215	---	3,215	547	252	799	717	---	717	13,316
	Kodiak Island	672	303	975	11,077	536	11,613	5,201	---	5,201	32	---	32	4	---	4	17,825
Cook Inlet Packing Co.	Port Graham	490	476	966	355	293	648	1,724	153	1,877	120	87	207	2	5	7	3,705
Copper River Co-op, Inc.	Cordova	--	4,088	4,088	---	37	37	---	11	11	--	2,768	2,768	---	337	337	7,241
Crystal Falls Fish Co.	Crystal Falls	759	45	804	---	---	---	---	---	---	348	358	706	77	78	155	1,665
Emard Packing Co.	Anchorage	2,412	7,707	10,119	126	---	126	3,972	---	3,972	1,595	744	2,339	219	6,011	6,230	22,786
Fidalgo Is. Packing Co.	Port Graham	982	952	1,934	711	587	1,298	3,447	305	3,752	241	173	414	3	11	14	7,412
P. E. Harris Company	False Pass	22,233	--	22,233	10,188	---	10,188	41,297	---	41,297	147	---	147	308	---	308	74,173
	Port Moller	270		270	3	---	3	489	---	489	11	-	11	7	---	7	780
Kadiak Fisheries Co.	Shearwater	792	1,691	2,483	20,057	2,096	22,153	9,930	869	10,799	146	8	154	6	20	26	35,615
King Crab, Inc.	Kodiak	3,078	208	3,286	3,438	95	3,533	7,776	350	8,126	751	---	751	---	---	--	15,696
	Ouzinkie - Shearwater	35	19	54	936	92	1,028	5,083	330	5,413	6	-	6	---	-	-	6,501
Kayak Packing Co. (Floating)	Copper River	268	--	268	---	---	---	---	---	---	--	---	--	105	---	105	373
	Alaska Peninsula	--	--	---	2,997	---	2,997	1,292	---	1,292	360	---	360	---	--	--	4,649
New England Fish Co.	Cordova & King Cove	1,262	8,953	10,215	8,277	12	8,289	9,458	---	9,458	6,058	---	6,058	5	769	774	34,794
Pacific American Fisheries	King Cove, Alitak, Snug Harbor	5,174	8,978	14,152	42,811	714	43,525	33,459	1,199	34,658	455	---	455	14	9	23	92,813
Parks Canning Co.	Uyak Bay	1,138	--	1,138	7,708	---	7,708	6,857	---	6,857	44	---	44	4	---	4	15,751
Port Chatham Pkg. Co.	Portlock	--	475	475	---	953	953	---	3,500	3,500	--	15	15	---	16	16	4,959
San Juan Fishing & Pkg. Co.	Kodiak	305	511	816	4,793	488	5,281	3,993	291	4,284	79	5	84	7	13	20	10,485
Snug Harbor Packing Co.	Snug Harbor	2,534	--	2,534	171	---	171	3,694	---	3,694	1,027	--	1,027	8	---	8	7,434
Washington Fish & Oyster Co.	Kodiak Is. Points	409	561	970	5,262	636	5,898	3,317	419	3,736	72	4	76	---	4	4	10,684
West Point Canning Co.	Uganik Bay	--	1,818	1,818	---	816	816	---	440	440	--	8	8	---	---	--	3,082
Western Fisheries Co.	Cordova	108	6,273	6,381	2	12	14	---	---	---	5,417	588	6,005	---	769	769	13,169
Whitney & Company	Port Graham	982	952	1,934	710	586	1,296	3,447	305	3,752	240	173	413	---	---	--	7,395
TOTAL CENTRAL ALASKA		75,045	69,908	144,953	150,097	8,549	158,646	186,036	9,476	195,512	24,731	6,418	31,149	1,850	8,823	10,673	540,933

KADIAK
FISHERIES COMPANY
1826 EXCHANGE BLDG.
SEATTLE 4, WASHINGTON

ALASKA
CANNED SALMON

ALASKA CANNERIES
SHEARWATER and PORT BAILEY

ESTABLISHED 1898

ANDERSON & MISKIN, LTD.

EXPORTERS

CANNED FISH

Canadian Salmon American Salmon
Canadian Herring Canadian Pilchards

OFFICES

Colman Building
SEATTLE

448 Seymour Street
VANCOUVER, CANADA

CABLE ADDRESS — MISKAND

CENTRAL ALASKA CANNED SALMON PACKS

ALASKA PENINSULA, SOUTH SIDE (Cases)						YEAR	CHIGNIK (Cases)					
Reds	Pinks	Chums	Cohoes	Kings	TOTAL		Reds	Pinks	Chums	Cohoes	Kings	TOTAL
74,412	266,144	175,340	11,297	3,741	530,934	1935	60,808	19,504	17,027	1,611	127	99,077
276,548	512,740	199,222	27,226	3,678	1,019,414	1936	100,499	35,917	10,278	4,643	108	151,455
92,639	451,139	117,147	6,836	2,262	670,023	1937	52,727	57,620	10,193	1,626	154	122,320
57,439	367,827	128,574	21,650	1,655	577,145	1938	35,117	12,071	6,792	2,254	148	56,412
149,046	292,203	120,901	9,835	4,483	576,468	1939	142,770	13,744	6,874	728	377	164,493
88,690	356,969	209,749	18,063	3,330	676,801	1940	27,772	4,083	2,349	20	----	34,224
97,695	233,438	163,058	17,298	3,008	514,497	1941	59,373	16,373	15,345	2,322	316	93,729
56,886	291,392	117,532	10,437	843	477,090	1942	56,977	22,962	11,853	1,093	378	93,263
177,000	167,024	70,727	6,657	1,934	423,342	1943	110,086	4,265	4,638	1,924	290	121,203
40,585	123,988	82,560	21,108	819	269,060	1944	47,448	29,283	6,221	1,223	442	84,617
58,984	140,319	73,752	9,923	1,765	284,743	1945	18,666	18,381	11,582	638	222	49,489
50,808	89,164	88,544	12,122	688	241,326	1946	70,817	39,544	22,049	695	305	133,410
83,407	115,916	81,921	4,343	456	286,043	1947	146,788	23,640	5,417	512	111	176,468
23,916	66,743	82,494	2,689	151	175,993	1948	33,574	47,393	31,348	79	79	112,473
47,751	70,866	39,863	1,526	723	160,729	1949	54,146	3,976	11,210	512	129	69,973
135,595	88,452	49,703	5,315	803	279,868	1950	31,644	28,737	8,885	1,135	127	70,528
15,344	116,730	43,007	3,440	183	178,704	1951	25,857	18,576	16,135	719	231	61,518
64,685	38,317	110,249	4,106	182	217,539	1952	14,852	23,113	49,359	94	20	87,438
142,477	131,958	138,117	3,364	624	416,540	1953	37,758	32,186	46,738	88	127	116,897
45,719	64,847	112,598	2,155	561	225,880	1954	11,078	29,000	38,046	93	45	78,262
45,318	76,639	54,263	1,638	541	178,399	1955	31,070	29,484	25,753	2	114	86,423
72,518	72,237	136,678	2,498	659	284,590	1956	64,071	21,149	30,934	698	40	116,892
22,676	30,168	117,452	2,301	653	173,250	1957	28,248	14,529	21,746	422	137	65,082
18,061	76,469	94,930	6,279	176	195,914	1958	26,424	18,884	31,871	94	81	77,354
23,549	45,595	78,946	983	245	149,318	1959	29,831	3,659	20,746	33	44	54,313
58,594	74,141	93,594	3,208	463	230,000	Aver.	30,083	21,932	29,021	338	97	81,471

KODIAK AREA (Cases)						YEAR	COOK INLET (Cases)					
Reds	Pinks	Chums	Cohoes	Kings	TOTAL		Reds	Pinks	Chums	Cohoes	Kings	TOTAL
119,720	534,083	42,130	6,753	350	703,036	1935	104,694	22,506	14,400	14,977	18,863	175,440
202,983	394,025	39,248	17,548	620	654,424	1936	188,063	51,350	23,780	31,345	19,723	314,261
120,674	769,055	29,353	14,179	357	933,618	1937	109,471	21,528	12,976	14,005	24,674	182,654
142,112	450,098	69,792	14,716	316	677,034	1938	170,725	54,894	16,260	32,745	16,060	290,684
115,604	603,492	62,185	9,442	651	791,374	1939	183,304	15,570	20,726	13,076	16,554	249,230
93,751	443,154	60,332	14,246	313	611,796	1940	129,952	122,437	26,695	46,015	15,995	341,093
121,725	508,306	57,368	22,854	638	710,891	1941	90,885	38,235	24,706	31,105	27,448	212,379
83,340	313,711	76,563	10,751	363	484,728	1942	98,418	55,722	40,110	61,734	28,617	284,604
129,105	555,209	41,766	5,682	308	730,070	1943	102,746	60,540	26,292	23,447	30,963	243,988
142,212	335,683	56,035	5,623	183	539,736	1944	156,799	96,694	23,311	25,442	25,668	327,914
154,513	491,346	64,957	5,640	521	716,977	1945	118,849	54,370	28,302	281718	22,420	252,659
65,810	541,334	37,817	3,982	34	648,977	1946	105,065	60,101	31,593	35,835	17,191	249,785
85,805	494,211	23,133	6,752	27	609,928	1947	106,180	30,073	21,183	34,430	30,718	222,584
98,030	303,564	93,918	4,046	189	499,747	1948	133,828	75,678	38,086	29,462	32,688	309,742
69,861	208,537	63,632	5,055	803	347,888	1949	165,588	19,139	21,844	26,783	31,234	264,588
64,463	266,694	73,846	5,786	408	411,197	1950	207,032	62,528	52,572	63,565	34,247	419,944
81,117	126,238	89,926	8,842	5,996	312,119	1951	171,030	24,296	21,884	27,707	59,973	304,890
89,888	281,405	141,730	4,678	1,963	519,664	1952	94,951	115,666	30,095	20,252	22,931	283,895
47,451	273,344	68,239	5,143	328	394,505	1953	101,206	27,208	41,457	18,880	28,952	217,703
34,643	382,779	141,682	6,597	682	566,383	1954	105,571	133,864	85,083	33,318	23,995	381,831
17,923	525,322	54,290	3,059	78	600,672	1955	79,006	62,454	29,450	13,698	15,034	199,642
29,461	156,127	62,970	4,990	157	253,705	1956	110,186	80,081	85,172	16,918	16,995	309,352
15,643	232,975	96,680	3,885	63	349,246	1957	58,102	18,709	122,146	9,713	12,549	221,219
18,803	254,320	91,704	3,304	95	368,226	1958	38,362	171,946	63,126	20,693	6,601	300,728
23,300	110,510	65,897	2,642	274	202,623	1959	43,466	5,919	35,244	8,855	7,057	100,541
42,271	260,971	88,696	4,893	1,004	397,834	Aver.	100,891	70,267	56,623	23,360	22,833	273,975

PRINCE WILLIAM SOUND and RESURRECTION BAY (Cases)						YEAR	COPPER and BERING RIVER AREA (Cases)				REGIONAL GRAND TOTAL
Reds	Pinks	Chums	Cohoes	Kings	TOTAL		Reds	Cohoes	Kings	TOTAL	
16,096	201,756	53,226	3,447	621	275,146	1935	8,453	9,385	760	18,598	1,802,231
13,440	609,537	23,660	5,245	431	652,313	1936	75,296	15	2,513	77,824	2,869,691
8,492	182,762	21,941	6,651	329	220,175	1937	78,238	5,463	3,868	87,569	2,216,359
10,615	461,114	31,218	6,846	251	510,044	1938	65,777	155	2,514	68,446	2,179,765
12,390	129,491	28,756	3,858	257	174,752	1939	52,285	1,116	2,192	55,593	2,011,910
7,065	521,745	54,001	10,257	182	593,250	1940	37,847	30,521	1,337	69,705	2,326,869
7,083	217,007	73,776	6,430	100	304,396	1941	36,868	83,142	3,067	123,077	1,958,969
13,289	366,965	82,633	13,703	449	477,039	1942	47,849	84,322	5,262	137,433	1,954,157
9,285	511,818	30,620	8,237	2,595	562,555	1943	57,418	21,837	4,893	84,148	2,165,306
12,741	416,848	118,159	7,902	158	555,808	1944	62,780	34,949	2,517	100,246	1,877,381
17,382	493,482	154,080	4,941	102	669,987	1945	70,744	41,103	6,037	117,884	2,091,739
10,432	317,329	76,003	16,037	408	420,209	1946	45,645	25,821	7,145	78,611	1,772,318
17,995	380,017	65,018	7,270	180	470,440	1947	30,717	22,231	3,596	56,544	1,822,077
19,115	123,411	47,008	5,048	74	194,656	1948	13,536	28,405	1,237	43,180	1,335,791
8,423	275,830	83,195	13,016	167	380,631	1949	46,404	15,986	1,964	64,354	1,288,163
7,179	111,838	57,464	12,441	88	189,010	1950	70,592	18,997	4,517	94,106	1,464,654
66,871	47,249	56,680	30,555	5,195	206,550	1951	39,963	24,513	3,737	68,213	1,131,994
107,471	118,905	68,430	37,987	9,231	342,024	1952	103,533	1,605	9,337	114,475	1,565,035
5,355	124,122	34,929	4,454	37	168,897	1953	51,136	3,884	3,163	58,183	1,372,725
1,688	1,240	1,670	603	---	5,201	1954	102,850	33,035	4,336	140,221	1,397,778
1,864	5,941	1,602	663	---	10,070	1955	56,071	27,610	5,840	89,521	1,164,727
15,771	186,537	49,334	3,678	31	255,351	1956	49,023	20,242	3,330	72,595	1,292,485
6,323	35,431	74,706	1,891	171	118,522	1957	48,994	10,198	2,149	61,341	988,660
1,001	296,140	75,408	529	2	373,080	1958	28,328	9,285	2,219	39,742	1,355,044
---	---	---	---	---	---	1959	25,145	22,045	2,980	50,170	556,965
21,352	92,740	42,022	9,280	1,476	166,871	Aver.	58,455	17,141	4,161	78,857	1,229,007

NOTE: Figures are based on U.S. Fish & Wildlife Service final data, which DO NOT include fish caught in these areas and canned elsewhere, and accordingly are somewhat different from those in other tables compiled independently by PACIFIC FISHERMAN. Figures for the latest year shown are preliminary. "Average" figures are for the last ten years.

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from the Height of the run
handled Intelligently
by people of Experience
with profound Loyalty to customers

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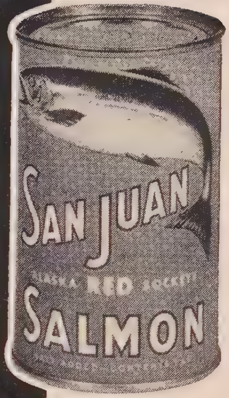
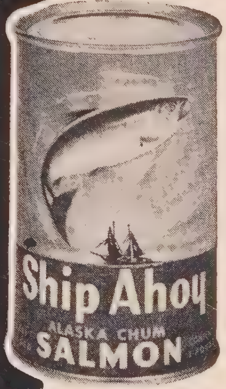
CANNED SALMON DISTRIBUTORS
5506 WHITE-HENRY-STUART-BUILDING
SEATTLE 1, WASHINGTON





Representing

EGEGIK PACKING CO.
INTERCOASTAL PACKING CO.
SAN JUAN FISHING & PACKING CO.
TODD PACKING CO.
NORTHERN COMMERCIAL CO.

RECAPITULATION OF ALASKA CANNED SALMON PACK-1959

DISTRICT	RED or SOCKEYE			PINK			CHUM			MEDIUM RED or COHO			KING or CHINOOK			GRAND TOTAL (CASES)
	1-lb & 4-lb 48-lb net	1/2-lb & 1/4-lb. 48-lb. net	Total	1-lb & 4-lb 48-lb net	1/2-lb & 1/4-lb 48-lb. net	Total	1-lb & 4-lb 48-lb net	1/2-lb & 1/4-lb 48-lb. net	Total	1-lb & 4-lb 48-lb net	1/2-lb & 1/4-lb 48-lb net	Total	1-lb & 4-lb 48-lb net	1/2-lb & 1/4-lb 48-lb net	Total	
Western Alaska	290,042	40,253	330,295	25	----	25	42,672	----	42,672	6,597	----	6,597	18,826	3,566	22,392	401,981
Central Alaska	75,045	69,908	144,953	150,097	8,549	158,646	186,036	9,476	195,512	24,731	6,418	31,149	1,850	8,823	10,673	540,933
Southeast Alaska	29,992	23,528	53,520	376,747	45,261	422,008	131,357	10,768	142,125	24,281	15,026	39,307	1,012	----	1,012	657,972
TOTAL ALASKA	395,079	133,689	528,768	526,869	53,810	580,679	360,065	20,244	380,309	55,609	21,444	77,053	21,688	12,389	34,077	1,600,886

1959-SOUTHEAST ALASKA CANNED SALMON PACK

COMPANY	CANNERY LOCATION	RED or SOCKEYE			PINK			CHUM			COHO			KING	GRAND TOTAL (full cases)
		1-lb. Talls etc.	1/2-lb. Flats (8 doz.)	TOTAL	1-lb. Talls etc.	1/2-lb. Flats (8 doz.)	TOTAL	1-lb. Talls etc.	1/2-lb. Flats (8 doz.)	TOTAL	1-lb. Talls etc.	1/2-lb. Flats (8 doz.)	TOTAL	1-lb. Talls etc.	
Alaska Packers Association	Ketchikan	461	----	461	7,087	----	7,087	1,504	----	1,504	237	----	237	39	9,328
Annette Islands Canning Co.	Metlakatla	2,982	----	2,982	37,334	----	37,334	13,433	----	13,433	1,126	----	1,126	---	54,875
Columbia River Packers Assn.	Southeastern Alaska	66	----	66	1,655	----	1,655	379	----	379	47	----	47	2	2,149
Columbia-Wards Fisheries	Southeastern Alaska	2,488	1,030	3,518	19,618	1,288	20,906	3,900	----	3,900	1,020	----	1,020	50	29,394
Excursion Inlet Packing Co.	Excursion Inlet	1,313	6,249	7,562	10,852	11,399	22,251	24,918	----	24,918	7,641	8,294	15,935	300	70,966
Fishermen's Packing Corp.	Southeastern Alaska	921	101	1,022	10,260	17	10,277	2,905	103	3,008	546	----	546	26	14,879
Haines Packing Co.	Haines	213	4,081	4,294	36	3,726	3,762	6,864	5,118	11,982	940	1,452	2,392	230	22,660
P. E. Harris Company	Chatham	11	----	11	381	----	381	142	----	142	41	----	41	---	575
	Hawk Inlet	1,464	----	1,464	12,886	----	12,886	4,863	----	4,863	1,010	----	1,010	53	20,276
	Waterfall	315	----	315	866	----	866	187	----	187	86	----	86	---	1,454
Hood Bay Salmon Co.	Hood Bay	405	----	405	21,989	----	21,989	3,537	----	3,537	265	----	265	---	26,196
Hydaburg Co-operative Assn.	Hydaburg	1,400	----	1,400	13,094	----	13,094	3,894	----	3,894	707	----	707	4	19,099
Juneau Cold Storage Co.	Juneau	571	----	571	1,454	----	1,454	1,050	----	1,050	1,118	----	1,118	---	4,193
Kayler-Dahl Fish Co.	Petersburg	450	2,300	2,750	6,500	1,650	8,150	200	2,750	2,950	----	----	----	---	13,850
Keku Canning Co.	Kake	790	----	790	15,311	----	15,311	4,435	----	4,435	572	----	572	17	21,125
Klawak Oceanside Packing Co.	Klawak	1,600	----	1,600	10,710	----	10,710	3,460	----	3,460	550	----	550	---	16,320
Nakat Packing Corp.	Waterfall	768	3,817	4,585	29,414	9,139	38,553	5,848	1,947	7,795	640	1,858	2,498	50	53,481
New England Fish Co.	Ketchikan, Waterfall & Chatham	5,819	2,850	8,669	70,545	6,754	77,299	20,435	599	21,034	3,109	2,210	5,319	34	112,355
Pacific American Fisheries, Inc.	Petersburg	6	2,374	2,380	18,174	5,237	23,411	4,620	147	4,767	141	1,102	1,243	76	31,877
Pelican Packing Co.	Southeast Alaska	5,571	----	5,571	41,506	----	41,506	12,445	----	12,445	2,005	----	2,005	---	61,527
Petersburg Processors, Inc.	Petersburg	799	----	799	16,318	----	16,318	3,733	----	3,733	1,274	72	1,346	40	22,236
Wards Cove Packing Co.	Ketchikan	549	726	1,275	14,211	6,051	20,262	3,956	104	4,060	567	38	605	64	26,266
Washington Fish & Oyster Co.	Hood Bay	60	----	60	675	----	675	168	----	168	51	----	51	---	954
	Petersburg	180	----	180	560	----	560	46	----	46	16	----	16	10	812
Whiz Fish Products Co.	Kake	790	----	790	15,311	----	15,311	4,435	----	4,435	572	----	572	17	21,125
TOTAL SOUTHEAST ALASKA		29,992	23,528	53,520	376,747	45,261	422,008	131,357	10,768	142,125	24,281	15,026	39,307	1,012	657,972

Halferty

67th Year

SEATTLE, U.S.A.

SALMON Alaska

A. S. I. Liquidates

- Operations of the Alaska fisheries in 1960 will be undertaken without Alaska Salmon Industry, Inc., which for many years has represented a grouping of packers in their labor negotiations and legislative contacts.

With the re-alignment resulting from statehood and the transfer of regulatory authority from the Department of the Interior, Alaska Salmon Industry, Inc., was dissolved Dec. 31, 1959.

1960 Bristol Bay Prospects

- Possibility that Bristol Bay in 1960 may receive a Red salmon run comparable with the great ones of the past is one of the intriguing aspects of Alaska fisheries this year.

The optimism is not shared by all who venture forecasts in the admittedly perilous field of predicting salmon runs, but the Fisheries Research Institute of the University of Washington has the best record in the field and many years of scientific data.

This agency visualizes a run to Bristol Bay above 30,000,000 Reds, and possibly above 40,000,000—contingent only upon Japanese high seas operations not bearing more heavily upon the Red salmon of Alaska origin than has been the case in the two preceding years.

1960 International Conservation

- Prospects for continued rational handling of North Pacific fisheries conservation on an international scale appear favorable in 1960, although only events of the producing season can yield the ultimate answer.

In 1958 and 1959 high seas fishing operations of the Japanese fleets in the North Pacific west of the Provisional Abstention Line at 175° West Longitude have not borne as heavily upon Red salmon stocks of North American origin as they did in 1956 and 1957.

The result has been evident in improved return of Reds to Bristol Bay streams, and in the stronger condition of the salmon entering the estuaries en route to their spawning grounds.

Southeast Alaska Canned Salmon Pack by Subdivisions

EASTERN DISTRICT (Cases)						YEAR	WRANGELL DISTRICT (Cases)					
Reds	Pinks	Chums	Cohoes	Kings	TOTAL		Reds	Pinks	Chums	Cohoes	Kings	TOTAL
16,687	284,097	135,981	14,698	5,016	456,479	1936	25,405	326,866	93,544	27,726	1,085	474,626
8,923	323,556	65,931	6,904	8,257	413,571	1937	22,067	383,115	61,189	22,378	1,959	490,708
14,244	260,145	58,041	13,245	4,794	350,469	1938	18,492	217,161	59,652	20,433	86	315,824
11,730	217,432	53,199	7,179	317	289,857	1939	17,137	318,808	40,525	12,712	18	389,200
7,332	224,495	76,621	9,588	261	318,297	1940	21,306	165,783	73,544	32,040	26	292,699
9,079	601,161	64,880	9,210	113	684,443	1941	28,709	633,163	33,587	35,343	10	730,812
8,139	254,772	74,580	12,108	271	349,870	1942	22,212	167,742	67,652	42,730	895	301,231
7,192	93,048	110,912	5,452	799	217,403	1943	11,618	120,730	80,696	17,431½	68	230,544
10,905	116,501	109,884	5,384	426	243,100	1944	16,065	59,256	66,069	9,024	17	150,431
10,168	94,505	29,267	4,010	207	138,157	1945	17,600	118,531	17,603	15,571	101	169,406
6,082	29,636	21,480	4,622	122	61,942	1946	6,417	66,258	16,017	18,894	173	107,759
5,342	38,272	28,935	3,960	510	77,019	1947	6,226	99,343	23,870	11,315	2,308	143,062
4,240	13,308	15,378	12,542	1,736	47,204	1948	7,260	53,860	55,460	22,799	2,971	142,350
92	43,944	6,055	8,661		58,752	1949	9,573	312,318	22,417	17,176	563	362,047
5,015	13,028	32,096	3,096	183	53,418	1950	7,190	36,846	44,815	30,849	55	119,755
1,146	74,522	68,391	20,777	168	165,004	1951	16,405	189,750	88,994	81,353	315	376,817
1,986	51,015	41,246	6,468	2	100,717	1952	13,445	78,552	80,763	30,359	1,413	204,532
8,713	12,333	25,930	3,905	6	50,887	1953	19,281	40,718	84,904	22,356	645	167,904
2,323	15,057	59,044	800	23	77,247	1954	21,116	65,357	110,282	20,844	1,633	219,232
2,143	40,054	13,757	3,517	100	59,571	1955	8,205	122,563	25,137	14,526	472	170,903
3,142	27,187	21,743	1,795	103	53,970	1956	8,720	98,075	40,116	9,456	362	156,729
849	1,460	2,972	85	26	5,392	1957	12,481	78,692	73,409	7,583	715	172,880
1,211	5,154	5,029	1,513	21	12,928	1958	16,124	158,997	91,303	8,322	264	275,010
576	1,650	2,432	1,543	...	6,201	1959	10,462	117,916	32,597	10,768	449	172,192
2,710	24,146	27,264	4,350	63	58,534	Aver.	13,343	98,747	67,232	23,642	632	203,595

SOUTH PRINCE OF WALES ISLAND DISTRICT (Cases)					YEAR	SOUTHERN DISTRICT (Cases)					REGIONAL GRAND TOTAL
Reds	Pinks	Chums	Cohoes	TOTAL		Reds	Pinks	Chums	Cohoes	TOTAL	
25,716	620,300	104,038	33,170	783,224	1936	60,217	1,222,241	192,641	32,834	1,507,933	4,067,717
23,545	345,068	65,613	33,908	468,134	1937	36,031	671,257	165,508	17,098	889,894	2,933,896
20,395	329,083	81,737	39,708	470,923	1938	44,399	749,432	162,473	27,346	983,650	2,713,948
22,107	207,989	45,249	11,648	286,902	1939	46,699	549,500	80,549	16,427	693,175	2,035,497
11,283	251,718	58,655	19,001	340,657	1940	36,652	503,005	98,092	35,881	673,630	2,226,770
11,548	584,582	55,624	33,178	684,932	1941	42,980	1,012,240	89,384	38,846	1,183,450	4,294,333
12,091	337,418	96,628	36,901	483,038	1942	37,713	533,057	181,262	28,308	780,340	2,648,707
5,656	162,482	75,217	15,780	259,135	1943	23,660	473,156	165,752	29,537	692,105	1,892,868
7,790	144,209	94,371	18,816	265,186	1944	38,465	349,073	132,735	29,482	549,755	1,972,552
11,217	225,606	43,240	26,274	306,337	1945	33,735	418,327	77,829	30,873	560,764	1,506,662
6,141	203,887	67,452	17,340	294,820	1946	16,994	582,377	101,901	35,336	736,608	1,458,043
4,626	110,324	42,141	12,150	169,241	1947	9,279	308,929	88,107	22,248	428,563	1,067,656
2,886	163,397	64,240	26,125	256,648	1948	9,661	388,325	192,232	39,446	629,664	1,275,659
3,014	406,385	41,200	17,701	468,300	1949	8,561	909,596	100,512	41,364	1,060,033	2,511,274
2,591	182,381	83,659	16,199	284,830	1950	6,231	273,449	247,876	28,779	556,335	1,202,682
4,686	127,347	44,407	27,598	204,038	1951	13,438	592,425	124,633	38,474	768,970	1,964,222
10,952	103,694	28,715	15,632	158,993	1952	17,775	241,256	250,056	25,748	534,835	1,289,328
17,320	102,773	24,824	14,673	159,590	1953	32,916	150,693	139,136	21,886	344,631	977,482
15,235	53,063	43,073	10,435	121,806	1954	16,553	308,482	89,830	17,516	432,381	1,312,112
5,261	77,154	12,053	5,500	99,968	1955	9,548	198,193	27,179	18,800	253,720	839,752
6,646	127,465	27,269	7,683	169,063	1956	14,724	300,114	116,170	9,926	440,934	1,049,174
13,628	131,094	20,515	10,934	176,171	1957	17,804	120,358	117,063	12,830	268,055	910,394
6,881	94,225	26,431	7,662	135,199	1958	29.332	336.588	100.902	16.284	483,106	1,194,047
17,313	66,409	15,645	6,163	105,530	1959	6,803	123,993	40,462	5,040	176,298	752,842
10,051	106,561	32,659	12,248	161,519	Aver.	16,512	264,555	125,331	19,528	425,927	1,149,204

NOTE: -- Small quantities of Kings have been included with Cohoes in the last two districts listed. Final data for Southeast Alaska has not been reported by subdivisions since 1949. Figures are based on U. S. Fish and Wildlife Service final data, which DO NOT include fish caught in these areas and canned elsewhere, and accordingly are somewhat different from those in other tables compiled independently by PACIFIC FISHERMAN. Figures for the latest year shown are preliminary. "Average" figures are for the last ten years.

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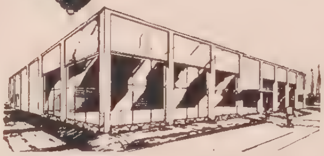

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Comparatively few of these fish have carried net-marks, where in previous years fish so scarred constituted a very large percentage of the run remaining to reach the American fishery and Alaska spawning grounds.

- Competent analysts of gillnet fishing on Bristol Bay in past seasons believe that the amount of gear proposed in the Alaska regulations could take between 12,000,000 and 15,000,000 fish if operated to the maximum of human endurance.

Such a catch from a run of 30,000,000 Reds, they declare, would result in staggering economic loss of fish, the cash value of which would far exceed the total price paid by the United States for Alaska. In addition, it would probably produce severe biological damage from over-spawning, and might impair the United States' case for continued abstention from salmon fishing in the eastern Pacific by the Japanese.

"Austerity" in Salmon Fishing

- In sharp contrast to the optimistic forecasts for Bristol Bay are those for 1960 in the great Sockeye or Red salmon fisheries of Puget Sound, the Fraser River, and British Columbia coastal centers of Sockeye abundance.

In these southerly fisheries a program of "austerity" is forecast by regulatory proposals, which are based upon the expectation that the Sockeye runs of 1960 will be the smallest of the four-year cycle.

Further, where the Pink salmon fisheries of this southerly area are cyclic in character the "off-year" in most cases is even-numbered.

For the Puget-Fraser Sockeye salmon catch of 1960, the International Pacific Salmon Fisheries Commission staff has uttered a forecast of a minimum permissible catch of 2,000,000 Sockeye, to be divided equally between Canadian and American fishermen.

Southeast Alaska Canned Salmon Packs by Subdivisions

(CASES)

YAKUTAT AREA						YEAR	CAPE FAIRWEATHER - DIXON ENTRANCE*					
Reds	Pinks	Chums	Cohoes	Kings	TOTAL		Reds	Pinks	Chums	Cohoes	Kings	TOTAL
22,545	9,737	105	13,609	1,102	47,098	1936	195,462	2,915,407	778,234	121,113	19,403	4,029,619
17,470	7,826	385	11,242	1,794	38 717	1937	150,274	2,135,342	503,381	77,283	28,899	2,895,179
27,211	7,417	397	26,854	1,450	63,329	1938	165,380	1,879,352	474,056	116,911	14,920	2,650,619
25,463	2,237	47	9,301	1,629	38,677	1939	169,895	1,473,121	296,057	56,935	812	1,996,820
14,947	4,962	164	27,747	511	48,331	1940	110,661	1,453,109	485,623	128,333	713	2,178,439
18,624	4,505	566	41,402	799	65,896	1941	119,235	3,636,256	319,372	152,569	1,005	4,228,437
11,005	2,465	10	21,513	96	35,089	1942	105,506	1,753,582	596,171	156,409	1,950	2,613,618
18,096	1,618	...	12,606	234	32,554	1943	67,247	1,036,821	673,692	80,928	1,626	1,860,314
15,386	3,447	3	14,301	789	33,926	1944	116,922	1,082,648	663,505	74,543	1,008	1,938,626
18,079	795	105	18,018	576	37,575	1945	111,717	1,040,854	266,732	90,687	1,980	1,511,970
4,081	1,939	23	4,056	358	10,457	1946	54,348	997,975	322,597	88,891	2,058	1,465,869
5,632	1,169	255	4,052	160	11,268	1947	50,273	679,648	257,689	69,490	3,843	1,060,943
3,589	4,042	506	10,840	305	19,282	1948	36,118	680,400	406,887	148,384	5,380	1,277,169
..	...	No operation in 1949		...	...	1949	39,552	2,103,982	243,483	124,919	1,015	2,512,951
9,154	1,873	647	6,252	271	18,197	1950	36,720	533,789	499,775	110,092	195	1,180,571
11,748	1,675	725	11,732	95	25,975	1951	58,569	1,224,907	465,609	252,661	541	2,002,287
5,425	1,813	1,302	19,113	660	28,313	1952	69,085	591,609	526,658	103,164	2,096	1,292,612
.	...	No operation in 1953		...	...	1953	125,958	353,247	410,384	86,479	1,414	977,482
..	. .	No operation in 1954		...	...	1954	112,711	524,220	589,800	82,839	2,542	1,312,112
..	...	No operation in 1955		...	..	1955	55,049	544,555	177,311	61,171	1,666	839,752
...	...	No operation in 1956		...	...	1956	72,851	634,272	294,282	46,497	1,272	1,049,174
.	. .	No operation in 1957		...	...	1957	82,512	404,221	364,756	57,547	1,358	910,394
..	.	No operation in 1958		...	...	1958	81,867	702,899	357,126	51,312	843	1,194,047
...	...	No operation in 1959		...	...	1959			No operation in 1959			
2,633	536	267	3,710	103	7,249	Aver.	69,532	551,372	368,570	85,176	1,193	1,075,843

ICY STRAIT DISTRICT							WESTERN DISTRICT					
Reds	Pinks	Chums	Cohoes	Kings	TOTAL		Reds	Pinks	Chums	Cohoes	Kings	TOTAL
69,191	349,700	183,036	20,791	5,583	628,301	1936	25,290	242,902	148,839	12,503	2,774	432,308
39,640	208,448	56,621	6,906	405	312,020	1937	18,477	194,675	90,053	5,616	24	308,845
46,526	158,698	52,890	14,058	215	272,387	1938	20,868	163,377	56,116	8,394	48	248,803
46,675	78,127	38,943	3,615	151	167,511	1939	24,839	87,137	35,328	3,628	36	150,968
18,846	121,320	74,615	13,409	262	228,452	1940	13,319	176,542	100,444	16,400	58	306,763
8,948	218,163	17,418	10,231	232	254,992	1941	16,962	562,046	56,078	22,368	456	657,910
10,964	118,790	44,834	8,311	248	183,147	1942	15,193	339,504	130,855	26,112	71	511,735
11,397	60,881	63,985	3,147	124	139,534	1943	16,266	123,318	177,210	9,039	55	325,888
21,568	123,896	67,537	3,830	77	216,908	1944	21,771	277,172	191,816	7,384	7	498,150
13,827	45,971	25,095	4,789	278	89,960	1945	23,247	109,183	65,431	6,585	19	204,465
6,315	26,449	31,376	4,436	60	68,636	1946	14,813	81,192	74,500	6,837	479	177,821
6,504	30,952	14,498	3,014	118	55,086	1947	17,718	92,612	57,592	14,658	837	183,417
501	2,745	6,893	1,239	...	11,378	1948	11,308	54,905	64,803	37,562	555	169,133
5,665	51,485	29,760	10,436	41	97,387	1949	12,580	378,876	43,136	29,721	442	464,755
3,362	3,287	25,164	5,473	22	37,308	1950	17,363	24,846	60,584	29,992	54	132,839
8,616	30,315	33,741	13,369	142	86,183	1951	16,195	147,996	107,998	65,040	6	337,235
11,169	17,919	26,184	7,355	217	62,844	1952	13,642	84,743	82,371	18,130	208	199,094
21,660	11,830	26,669	20,739	430	81,328	1953	26,068	34,900	108,921	3,167	86	173,142
8,590	13,369	25,831	1,547	90	49,427	1954	48,894	68,892	261,740	32,410	83	412,019
3,847	19,134	19,638	3,809	105	46,533	1955	26,045	87,457	79,547	15,752	256	209,057
8,958	12,669	16,92[illegible]	4,065	181	42,793	1956	30,661	68,762	72,064	13,676	522	185,685
16,438	18,328	54,580	19,944	344	109,634	1957	21,312	54,289	96,217	6,296	148	178,262
10,619	28,142	35,641	13,755	396	88.553	1958	17,700	79.793	97.820	3.841	97	199,251
10,595	22,925	22,331	26,455	324	82,630	1959	15,644	139,003	46,887	8,109	348	209,991
10,385	17,792	28,670	11,651	225	68,723	Aver.	23,352	79,068	101,415	19,641	181	223,658

*Cape Fairweather to Dixon Entrance comprises all Southeast Alaska with the exception of Yakutat, therefore figures in this section are the total of all the following districts. Final data for Southeast Alaska has not been reported by subdivisions since 1949. Catch canned at Icy Strait and Wrangell plants.

NOTE: Figures are based on U.S. Fish & Wildlife Service final data, which do not include fish caught in these areas and canned elsewhere, and accordingly are somewhat different from those in other tables compiled independently by PACIFIC FISHERMAN. Figures for the latest year shown are preliminary. "Average" figures are for the last ten years.

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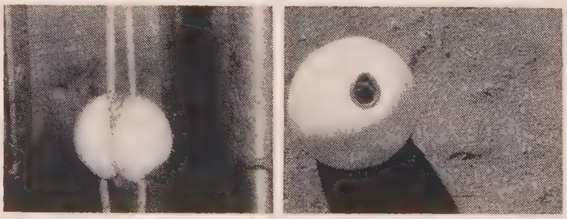

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PACK OF ALASKA CANNED SALMON BY DISTRICTS

Year	SOUTHEAST ALASKA							CENTRAL ALASKA							WESTERN ALASKA								TOTAL CASES	Year
	Plants Oper.	Red	Pink	Chum	Coho	King	Total Cases	Plants Oper.	Red	Pink	Chum	Coho	King	Total Cases	Plants Oper.	Red	Pink	Chum	Coho	King	Total Cases	Plants Oper.		
1905	13	207,375	142,008	37,685	41,079	5,460	433,607	9	345,575	3,235	...	16,518	6,427	371,755	25	1,021,478	23,354	4,287	9,797	30,238	1,089,154	47	1,894,516	1905
1906	20	250,567	326,713	131,405	84,149	2,396	795,230	8	451,659	3,188	...	10,316	7,861	473,024	19	798,504	19,866	123,407	16,278	20,680	978,735	47	2,246,989	1906
1907	22	177,149	542,268	140,392	58,632	1,289	919,730	8	482,968	10,255	...	15,258	14,355	522,836	18	657,687	18,244	44,025	11,784	27,794	759,534	48	2,202,100	1907
1908	23	198,366	592,638	180,204	48,963	2,552	1,022,723	8	377,101	30,661	...	11,543	6,416	425,721	19	1,087,211	20,834	38,309	8,426	14,824	1,169,604	50	2,618,048	1908
1909	19	280,542	455,999	83,001	39,920	857	860,319	8	358,285	5,581	...	10,275	16,913	391,054	18	1,074,667	3,293	37,711	6,361	30,264	1,152,296	45	2,403,669	1909
1910	23	282,265	494,363	231,735	82,620	402	1,091,385	10	364,875	31,797	131	19,928	15,786	432,517	19	825,447	31,348	22,352	11,641	24,087	914,138	52	2,438,777	1910
1911	32	238,895	969,866	290,843	100,793	1,441	1,601,838	11	412,647	24,143	2,008	17,326	15,862	471,986	21	669,163	27,347	10,969	11,585	28,075	747,139	64	2,820,963	1911
1912	51	254,851	1,053,847	589,578	134,914	6,607	2,039,777	14	422,347	136,891	29,591	19,782	14,198	622,809	22	1,227,060	114,247	19,359	15,088	21,789	1,397,543	87	4,060,129	1912
1913	42	190,685	1,299,400	254,689	58,071	1,006	1,803,851	14	364,253	49,299	5,038	13,284	15,393	447,267	23	1,419,381	54,217	7,927	6,022	11,768	1,505,315	79	3,756,433	1913
1914	45	294,842	872,504	597,435	112,163	12,087	1,889,031	14	395,110	195,830	17,693	36,739	11,132	656,504	23	1,511,622	29,489	47,350	8,890	24,946	1,622,297	82	4,167,832	1914
1915	46	229,709	1,820,171	375,260	90,161	25,135	2,540,436	17	500,000	43,951	39,404	26,062	22,978	632,395	23	1,192,248	6,251	69,744	10,347	37,581	1,316,171	86	4,489,002	1915
1916	54	182,075	1,335,291	505,405	182,405	18,482	2,223,658	19	572,096	371,845	64,320	55,298	22,160	1,085,719	27	1,365,271	46,410	145,513	27,481	25,537	1,610,212	100	4,919,589	1916
1917	60	202,951	2,149,075	750,187	152,538	29,657	3,284,408	26	725,925	137,955	86,764	36,065	19,236	1,005,945	29	1,556,005	11,436	40,762	5,105	18,659	1,631,967	113	5,922,320	1917
1918	75	226,108	2,034,997	954,498	152,689	17,248	3,385,540	29	662,829	358,491	313,196	47,904	21,818	1,404,238	30	1,720,622	24,724	98,965	15,979	18,301	1,887,591	134	6,677,369	1918
1919	75	240,208	1,521,897	1,146,943	169,300	30,016	3,108,364	30	437,341	107,924	163,530	54,596	12,075	775,466	28	526,794	27,613	37,989	6,242	109,642	707,280	133	4,591,110	1919
1920	80	199,829	1,026,862	830,538	112,178	32,869	2,202,276	35	533,122	510,350	148,122	67,744	20,417	1,279,755	28	742,829	76,222	44,048	12,389	37,990	913,478	143	4,395,509	1920
1921	30	105,084	416,958	182,272	90,845	9,034	804,193	27	596,200	13,116	28,305	11,425	10,225	659,271	27	1,057,510	10,397	37,029	7,513	29,060	1,141,509	84	2,604,973	1921
1922	57	121,652	1,313,280	425,947	128,023	5,777	1,994,679	36	567,576	331,005	88,321	36,623	8,930	1,032,455	28	1,386,169	13,261	48,228	9,666	16,897	1,474,221	121	4,501,355	1922
1923	67	178,962	2,257,768	434,490	129,990	12,857	3,014,067	39	441,774	197,291	72,821	32,940	11,537	756,363	30	1,257,594	77	19,834	822	14,583	1,292,910	136	5,063,340	1923
1924	65	192,806	1,686,884	799,215	110,002	8,259	2,797,166	38	442,876	892,667	192,901	68,883	10,593	1,607,920	31	814,042	33,517	35,067	2,322	14,889	899,837	134	5,305,923	1924
1925	62	151,140	1,701,849	835,599	94,539	12,498	2,795,611	37	364,721	402,801	199,797	68,267	19,289	1,054,875	30	549,429	590	29,999	1,393	18,992	600,403	129	4,450,898	1925
1926	61	173,891	2,158,699	618,397	96,389	10,679	3,058,055	43	630,505	1,144,180	243,808	104,309	23,683	2,146,485	28	1,352,691	35,470	40,238	1,829	18,114	1,448,342	132	6,652,882	1926
1927	62	115,664	581,728	224,696	114,331	9,131	1,045,823	47	320,159	833,028	253,410	138,243	42,948	1,587,788	29	884,740	...	29,262	55	18,404	932,461	138	3,566,072	1927
1928	60	106,793	2,137,796	566,689	145,323	5,596	2,962,197	62	431,924	643,816	378,499	152,066	32,567	1,638,872	29	1,405,344	3,852	46,316	497	13,032	1,469,041	151	6,070,110	1928
1929	59	161,580	1,541,463	290,742	97,850	6,982	2,098,617	70	455,997	1,028,790	498,873	68,538	36,526	2,088,544	30	1,075,473	253	71,261	5,862	30,232	1,183,081	159	5,370,242	1929
1930	57	216,743	2,296,270	283,553	155,844	10,894	2,963,304	68	270,310	839,751	281,111	170,741	32,123	1,594,036	27	361,734	14,631	31,336	3,403	20,543	431,647	152	4,988,987	1930
1931	41	148,485	2,038,388	277,225	88,841	14,926	2,567,865	49	439,572	940,124	193,131	81,275	27,567	1,681,669	25	1,107,725	...	66,553	92	8,631	1,183,001	115	5,432,535	1931
1932	31	140,356	1,380,093	582,290	88,293	23,637	2,214,669	34	659,539	720,893	145,660	60,363	32,317	1,618,772	22	1,304,832	15,587	93,178	695	12,755	1,427,047	87	5,260,488	1932
1933	38	81,122	1,477,608	425,869	95,629	8,130	2,088,358	31	486,528	703,696	207,363	64,548	23,792	1,485,927	23	1,614,721	2,139	25,013	1,456	9,084	1,652,413	92	5,226,698	1933
1934	47	104,413	2,622,186	393,904	159,509	15,606	3,295,618	45	707,754	1,198,457	307,649	74,832	27,005	2,315,697	22	1,813,835	1,959	33,502	1,219	8,756	1,859,271	114	7,470,586	1934
1935	46	159,506	2,209,373	541,152	141,501	11,496	3,063,028	44	391,088	1,045,155	302,011	47,198	24,338	1,809,790	9	272,581	...	9,567	219	641	283,008	99	5,135,826	1935
1936	46	219,531	2,959,774	784,455	136,043	22,105	4,121,908	46	839,243	1,598,585	295,956	80,608	31,820	2,846,212	24	1,423,781	30,911	26,572	1,581	3,983	1,486,828	116	8,454,948	1936
1937	45	165,170	2,138,264	503,235	86,912	30,613	2,924,194	47	459,399	1,480,658	190,425	42,028	31,234	2,209,744	24	1,476,585	376	35,454	138	7,547	1,520,100	116	6,654,038	1937
1938	39	189,880	1,886,104	473,619	140,791	16,339	2,706,733	42	484,518	1,336,000	253,905	75,596	20,146	2,170,165	17	1,848,725	...	59,335	345	6,241	1,914,646	98	6,791,544	1938
1939	48	195,907	1,474,269	293,316	65,906	2,364	2,031,762	47	657,198	1,034,623	237,148	37,250	21,023	1,987,242	24	1,118,233	627	95,948	...	5,399	1,220,207	119	5,239,211	1939
1940	46	125,462	1,452,037	484,476	155,577	1,539	2,219,091	42	384,266	1,441,266	343,072	126,878	18,359	2,314,475	11	443,653	14,088	32,991	1,675	2,405	494,812	99	5,028,378	1940
1941	47	137,861	3,631,491	321,118	193,751	1,812	4,286,033	44	413,658	1,005,029	333,618	159,023	30,825	1,942,153	19	613,369	129	55,771	3,439	5,609	678,317	105	6,906,503	1941
1942	47	121,083	1,758,741	597,373	189,210	2,033	2,668,779	44	352,475	1,051,359	328,860	180,698	34,916	1,948,308	7	438,111	8,550	16,556	2,629	6,178	472,024	98	5,089,109	1942
1943	34	85,313	1,042,610	672,359	92,245	1,868	1,894,395	34	582,287	1,277,915	167,809	66,311	37,421	2,131,743	14	1,314,575	1,532	42,410	178	11,676	1,370,371	81	5,396,509	1943
1944	38	131,580	1,081,334	655,188	88,380	1,765	1,958,247	45	461,718	1,002,056	286,498	96,255	29,718	1,876,245	13	987,459	3,932	44,039	2,418	5,456	1,043,304	94	4,877,796	1944
1945	41	129,514	1,039,521	265,845	107,425	2,582	1,544,887	43	434,872	1,198,665	331,654	85,506	30,041	2,080,738	8	609,132	1,623	92,551	3,103	9,086	715,495	92	4,341,120	1945
1946	41	59,029	999,443	321,037	94,074	1,612	1,475,195	48	350,728	1,053,605	257,909	96,301	25,356	1,783,899	20	656,141	4,073	38,209	2,686	10,906	712,015	108	3,971,109	1946
1947	40	56,032	680,693	260,666	72,434	4,019	1,073,844	47	470,056	1,034,475	196,731	74,388	34,790	1,810,430	21	1,350,151	8,449	42,814	1,893	14,885	1,418,192	107	4,302,466	1947
1948	39	39,317	683,972	403,959	165,033	5,973	1,298,254	57	318,638	616,822	291,977	69,259	34,774	1,331,470	24	1,277,508	3,250	78,725	7,507	13,898	1,380,888	120	4,010,612	1948
1949	36	39,485	2,102,604	243,080	125,059	1,046	2,511,274	55	391,244	580,438	221,089	59,409	37,213	1,289,393	21	529,859	...	44,140	4,411	11,974	590,384	112	4,391,051	1949
1950	36	49,475	535,662	500,422	116,344	560	1,202,463	55	513,985	558,263	242,301	68,233	40,386	1,423,158	21	590,048	1,609	35,056	6,924	13,375	647,012	112	3,272,643	1950
1951	42	70,317	1,226,582	466,334	262,393	636	2,028,262	59	362,554	333,091	227,632	72,762	71,648	1,067,687	13	339,592	75	25,521	8,003	15,328	388,519	114	3,484,468	1951
1952	40	74,510	593,422	527,960	122,277	2,756	1,320,925	48	377,094	577,407	399,864	67,117	34,935	1,456,417	21	729,560	1,339	38,836	7,692	19,359	796,786	109	3,574,128	1952
1953	35	120,971	355,580	418,260	90,489	1,571	986,871	40	330,933	604,281	333,390	36,730	33,160	1,338,494	19	530,186	1,108	45,398	2,703	20,810	600,205	94	2,925,570	1953
1954	27	113,130	519,364	601,800	87,996	2,642	1,324,932	39	299,325	621,214	381,536	77,041	28,257	1,407,373	12	393,201	9,835	42,890	6,228	22,695	474,849	78	3,207,154	1954
1955	26	55,561	547,765	177,690	64,814	1,157	846,987	44	233,290	722,448	162,999	47,294	22,078	1,188,109	12	372,756	90	22,968	2,476	24,583	422,873	79	2,457,969	1955
1956	23	80,855	565,076	267,934	44,030	2,082	959,977	44	357,242	547,775	375,417	47,525	22,082	1,350,041	11	577,461	3,198	31,683	4,385	22,889	640,336	78	2,950,354	1956
1957	23	82,276	404,581	362,979	53,567	1,567	904,970	36	188,682	309,193	435,750	29,275	17,114	980,014	13	492,072	...	31,087	4,448	29,303	556,910	72	2,441,894	1957
1958	21	79,508	674,697	348,832	50,277	983	1,154,297	39	131,071	811,141	361,403	40,261	9,649	1,353,525	17	277,775	61,813	44,571	11,453	41,146	436,758	71	2,944,580	1958
1959	17	53,520	422,008	142,125	39,307	1,012	657,972	27	144,953	158,646	195,512	31,149	10,673	540,933	9	330,295	25	42,672	6,597	22,392	401,981	53	1,600,886	1959
Ave.	29	78,012	584,474	381,434	93,149	1,497	1,138,766	43	293,913	524,346	311,580	51,739	28,998	1,210,576	15	463,295	7,909	36,068	6,091	23,188	536,623	86	2,885,965	Ave.

NOTE: "Average is for the last ten years. Figures for years prior to 1952, and those for 1956, are revised from official U.S. data; those for 1958 are from PACIFIC FISHERMAN's own compilation; both are limited to fish canned in Alaska, and do not include Alaska fish canned on Puget Sound. The latter are included in figures from 1952 through 1955, which are from Pacific Fisherman's own data.

PUGET SOUND CANNED SALMON PACK - 1959

COMPANY	CANNERY LOCATION	SOCKEYE			PINK			CHUM			COHO or SILVER			KING or CHINOOK			GRAND TOTAL (Full Cases)
		1-lb. Talls & 4-lb. Flats etc.	1/2 & 1/4 -lb. Flats (48 lbs.) Net	TOTAL	1-lb. Talls & 4-lb. Flats etc.	1/2-lb. Flats (48 lbs.) Net	TOTAL	1-lb. Talls & 4-lb. Talls etc.	1/2 & 1/4 -lb. Flats (48 lbs.)	TOTAL	1-lb. Talls & 4-lb. Talls etc.	1/2 & 1/4 -lb. Flat (48 lbs.) Net	TOTAL	1-lb. Talls & 4-lb. Flats etc.	1/2 & 1/4 -lb. Flats (48 lbs.) Net	TOTAL	
American Packing Co.	Anacortes	425	7,734	8,159	5,467	---	5,467	8,735	8	8,743	---	998	998	---	---	---	23,367
	Seattle	---	---	---	157	---	157	---	---	---	4	74	78	---	---	---	235
Alaska Packers Assn.	Blaine	---	17,761	17,761	15,607	1,986	17,593	131	-	131	1,040	104	1,144	---	245	245	36,874
Burk-Fidalgo Canning Co.	Bellingham	182	6,740	6,922	10,976	1,006	11,982	2,806	---	2,806	1,182	283	1,465	169	41	210	23,385
Columbia River Packers Assn.	Bellingham	---	7,817	7,817	9,587	584	10,171	206	---	206	---	1,164	1,164	5	177	182	19,540
Crown Seafood Sales Co.	Seattle	---	914	914	1,220	---	1,220	3,022	---	3,022	5,980	---	5,980	--	---	---	11,135
Dahl Fish Co.	Bellingham	---	483	483	---	497	497	---	482	482	---	312	312	---	35	35	1,809
Dressel-Collins Fish Co.	Seattle	---	65	65	465	1,798	2,263	631	194	825	18	5,775	5,793	---	---	---	8,946
Fishermen's Packing Corp.	Anacortes	---	25,562	25,562	11,193	17,288	28,481	387	128	515	---	3,670	3,670	306	717	1,023	59,251
Friday Harbor Canning Co.	Friday Harbor	---	235	235	135	10	145	---	---	---	14	3	17	---	---	---	397
Iversen Canning Co.	Point Roberts	---	114	114	117	10	127	37	---	37	---	22	22	---	---	---	300
John C. Jackson, Inc.	Griffin Bay	---	1,034	1,034	---	997	997	---	50	50	---	247	247	---	--	---	2,328
Nakat Packing Corp.	Anacortes	---	5,710	5,710	8,700	250	8,950	---	---	---	---	850	850	---	---	---	15,510
Nelbro Packing Co.	Point Roberts	---	---	---	---	---	---	24,600	---	24,600	---	---	---	1,307	---	1,307	25,907
New England Fish Co.	Friday Harbor, etc.	39	6,479	6,518	13,287	732	14,019	17,318	571	17,889	3,295	745	4,040	175	43	218	42,684
Pacific American Fisheries	Bellingham	2	8,333	8,335	2,276	9,132	11,408	8,220	262	8,482	191	1,329	1,520	---	106	106	29,851
Seaport Fish Co.	Seattle	---	402	402	14	1,458	1,472	24,900	11	24,911	10	6,149	6,159	1,033	142	1,175	34,119
San Juan Fishing & Pkg. Co.	Seattle	---	692	692	3,567	279	3,846	4,036	3	4,039	287	9,943	10,230	---	1,367	1,367	20,174
Sebastian-Stuart Fish Co.	Anacortes	---	4,590	4,590	5,174	296	5,470	3	---	3	---	1,015	1,015	---	21	21	11,099
Washington Fish & Oyster Co., Inc.	Seattle	---	6,480	6,480	5,710	5,336	11,046	17,072	1,507	18,579	---	9,371	9,371	---	---	---	45,476
Whitney & Co.	Anacortes	---	13,783	13,783	10,078	7,562	17,640	565	222	787	---	8,076	8,076	345	552	897	41,183
Whiz Fish Products Co.	La Conner & Seattle	24	14,646	14,670	21,693	674	22,367	6,176	303	6,479	2,507	7,030	9,537	684	40	724	53,777
TOTAL		672	129,574	130,246	125,423	49,895	175,318	118,845	3,741	122,586	14,528	57,160	71,688	4,024	3,486	7,510	507,348

Puget Sound

- Puget Sound salmon production in 1959 saw Sockeye at the best level of abundance *for the cycle* in many years. The pack, while not large in comparison with the "big years," was above realistic expectations.

Pinks came in better volume than was anticipated by the International Salmon Commission, although far below normal for an even-numbered year. Part of the *relatively* favorable pack of this species probably was made at the expense of escapement to streams in Puget Sound and the Fraser River system as well.

- Although the Puget Sound Pink salmon catch of 1959 was below normal expectations for an odd-numbered year, it was substantially better than had been anticipated on the basis of pre-season forecasts predicated upon coastal water temperatures at the time the young Pinks had entered salt water in the spring of the preceding year.

Thus the catch, while below average, was above actual expectations.

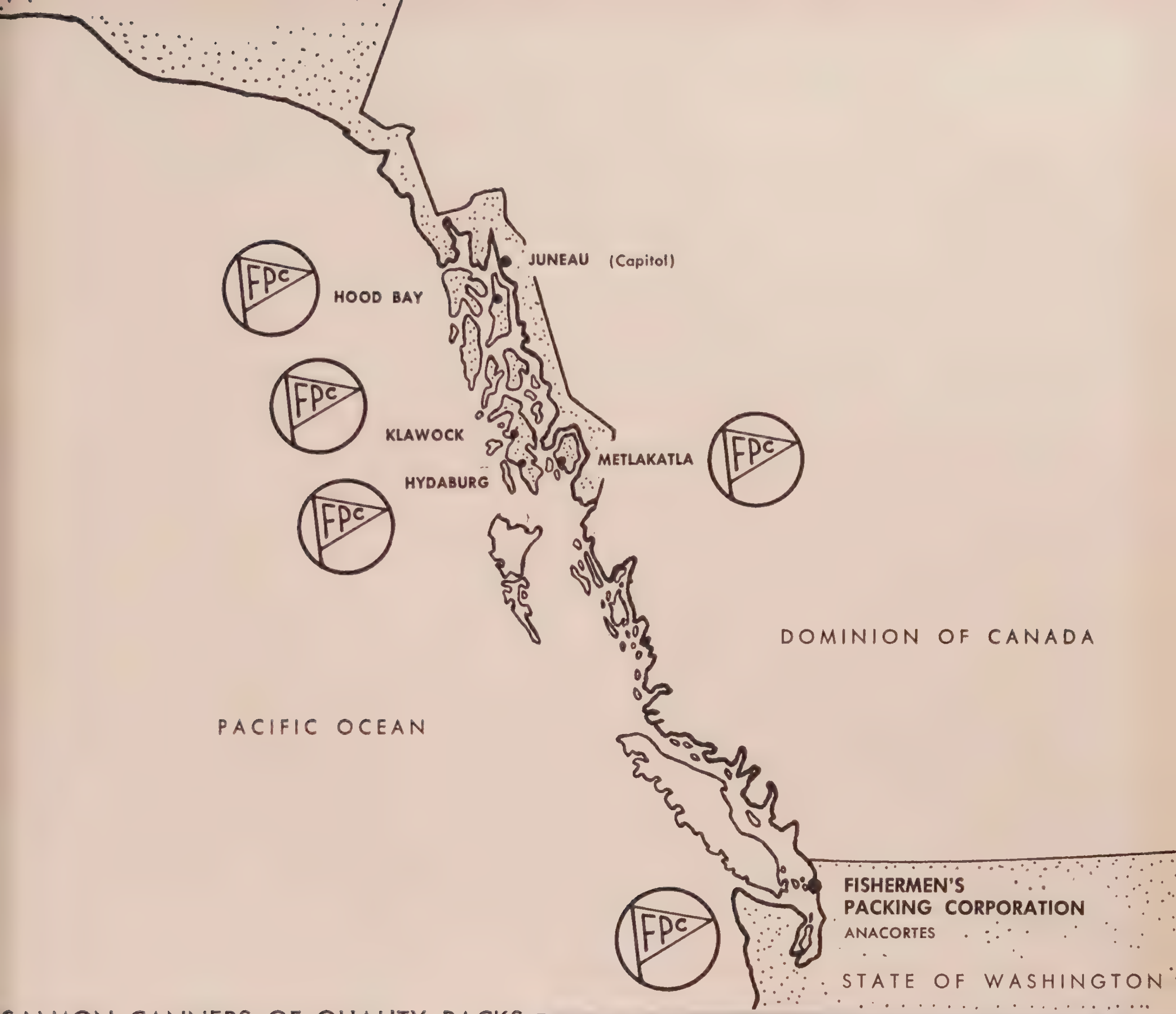
The Sockeye run of 1959 also was moderate in numbers, but substantially better than any run on that year's cycle since 1903. The escapement was satisfactory, and the outlook is considered altogether favorable.

Probability is that the Sockeye run of 1955 was over-fished, due to the extreme concentration of gear, with resulting inadequate spawning.

One adverse aspect of the 1959 run was the small size of the fish, rated among the smallest on the average of any year since the Fraser River run has been closely studied. As result, the case pack was small for a given number of fish.

Puget Silver salmon run again was disappointing, and escapement was secured only at the cost of severe restriction imposed on the fishermen in the inner waters of the Puget Sound area. Furthermore, there were extremely heavy freshets on a number of the streams tributary to the Sound during and after egg deposition and serious damage to the seeding is anticipated.

Chum production of 1959 also was



SALMON CANNERS OF QUALITY PACKS DISTRIBUTED UNDER BRAND NAMES

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FANCY CHINOOKS	**SNOW KING**
PINKS	**WATERFALL**
CHUMS	**GOLDEN GLOW**

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A. Strom, President

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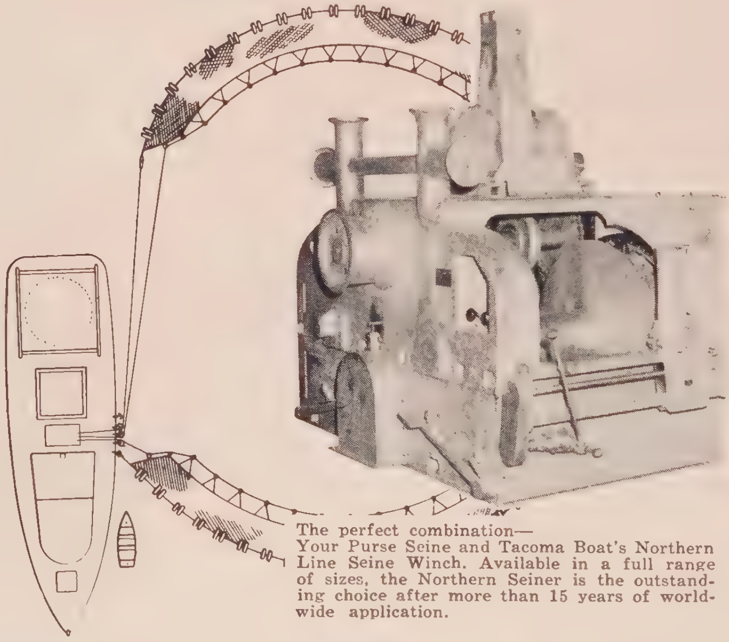
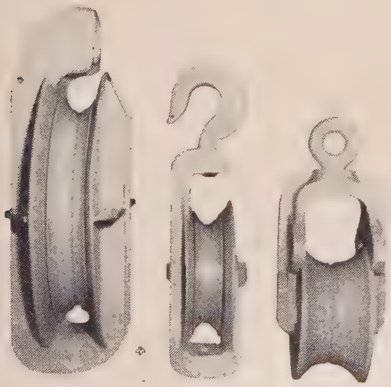


The perfect combination—
Your Purse Seine and Tacoma Boat's Northern Line Seine Winch. Available in a full range of sizes, the Northern Seiner is the outstanding choice after more than 15 years of world-wide application.



Northern Line blocks available in large variety of sizes & types—open or closed. Illustrated are No. 1225 & 902 purse blocks and No. 1045 Dandelion Block.

• • • • • •

The Northern Line Includes All Types of Deck Machinery for Fishing Vessels of Every Size

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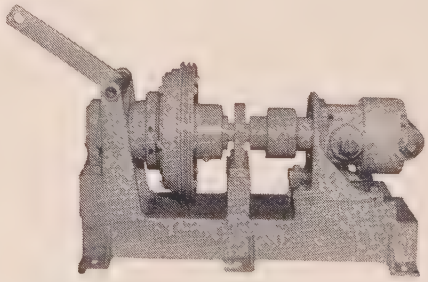


Northern Line Hydraulic Power Pack. Clutch controlled—belt or chain drive 3 to 100 HP input.

TACOMA BOATBUILDING CO., INC.

132 SITCUM WATERWAY PHONE: MARKET 7-8138 TACOMA 2, WASHINGTON

extremely disappointing. The canned Chum pack of Puget Sound is not directly indicative of the character of the run of this species, as there were substantial quantities of British Columbia Chum salmon imported fresh for canning at Washington canneries, notably at Point Roberts and Seattle.

The low cycle in Chum abundance appears to be shared alike by southern British Columbia and Washington streams.

SALMON
Puget Sound

- Puget Sound-Fraser River salmon prospects for 1960 are for limited production of Sockeye.

This is the year of lowest abundance in the four comprising the Fraser River cycle. Due to the necessity of providing maximum escapement for the conservation of the early and late-running races, principal commercial fishery will be concentrated in a three-weeks period in late July and the first half of August during the main run of fish bound to the Chilko spawning area.

PUGET SOUND CANNED SALMON PACK

Puget Sound salmon canning commenced in 1877 with a pack of 5,500 cases, but no segregation by species is available prior to 1889. From the beginning production increased, with much fluctuation, to 22,000 cases in 1887; the average for intervening years being 7,867 cases. Values shown are based on opening prices. "Average" figures at bottom of table are for last ten years.

YEAR	# of Plants Oper.	Sockeye		Pink		Chum		Coho		Chinook		TOTAL		YEAR
		Cases	Value	Cases	Value	Cases	Value	Cases	Value	Cases	Value	Cases	Value	
1888	4	...	...	...	...	...	...	...	...	...	...	21,975	$126,356	1888
1889	2	...	...	2,809	$7,584	1,145	$3,435	7,480	$37,400	240	$1,200	11,674	49,619	1889
1890	1	...	...	...	...	4,000	12,000	3,000	15,000	1,000	5,000	8,000	32,000	1890
1891	2	5,538	$24,921	5,647	15,246	3,093	10,825	5,869	19,368	382	2,101	20,529	72,461	1891
1892	2	2,954	11,816	...	...	16,180	56,630	7,206	24,500	86	473	26,426	93,419	1892
1893	3	47,852	103,371	17,530	47,331	11,380	31,295	11,812	59,060	1,200	6,480	89,331	247,537	1893
1894	3	41,781	188,014	9,049	24,432	22,152	60,918	22,418	89,672	...	...	95,400	363,036	1894
1895	7	65,143	273,108	23,633	62,556	38,785	94,741	50,865	154,218	1,542	7,325	179,968	591,948	1895
1896	11	72,979	350,299	...	...	26,550	73,013	82,640	264,448	13,495	67,475	195,664	755,235	1896
1897	12	312,048	1,248,192	57,268	171,804	23,310	64,103	91,900	282,133	9,500	39,045	494,026	1,805,277	1897
1898	18	252,000	1,058,400	...	...	38,400	105,600	98,600	335,240	11,200	50,624	400,200	1,549,864	1898
1899	19	499,646	2,368,334	252,733	734,241	31,481	86,427	111,387	418,176	24,364	103,180	919,611	3,170,358	1899
1900	19	228,704	1,149,000	...	...	89,100	245,025	128,200	512,800	22,350	134,100	469,450	1,940,925	1900
1901	..	1,105,096	...	275,494	...	...	...	...	...	...	...	1,380,590	...	1901
1902	21	339,556	2,047,655	...	...	93,492	467,460	85,817	429,085	30,049	150,245	548,914	3,094,445	1902
1903	22	167,211	1,003,260	181,236	407,984	12,001	30,002	103,450	413,800	14,500	72,500	478,398	1,929,546	1903
1904	13	123,419	653,871	...	...	49,656	124,254	118,127	447,851	14,441	69,352	305,643	1,295,328	1904
1905	24	847,122	4,952,718	70,992	212,976	41,057	102,643	79,335	337,174	1,804	9,922	1,040,310	5,615,433	1905
1906	16	182,241	1,251,236	...	...	149,218	708,781	94,497	472,485	8,139	48,834	430,602	2,481,336	1906
1907	14	93,122	698,416	433,423	1,300,269	50,249	150,847	119,472	476,288	1,814	16,326	698,080	2,642,146	1907
1908	22	170,951	1,196,657	6,075	18,225	47,607	142,821	128,922	644,922	95,210	664,470	448,765	2,669,095	1908
1909	11	1,097,904	6,183,300	370,993	902,342	53,688	128,916	143,133	630,446	13,019	72,604	1,632,949	7,917,608	1909
1910	24	248,014	1,673,095	108	388	146,942	514,297	162,755	895,153	10,064	60,324	567,883	3,143,256	1910
1911	15	127,761	1,168,145	1,046,992	4,302,344	104,321	392,122	256,124	1,591,185	21,823	172,582	1,557,021	7,727,524	1911
1912	20	184,680	1,660,173	700	2,185	60,760	154,193	149,727	761,200	20,252	101,706	416,125	2,679,457	1912
1913	22	1,673,099	10,871,178	791,886	2,092,401	56,225	124,970	61,019	235,372	1,234	5,247	2,583,463	13,329,168	1913
1914	31	335,230	3,208,969	892	4,212	278,801	955,920	151,893	759,689	26,044	167,322	792,860	5,095,839	1914
1915	41	64,584	676,769	583,649	1,795,285	411,724	155,744	180,783	902,335	28,466	145,555	1,269,206	4,675,418	1915
1916	32	84,637	699,161	1,887	8,264	427,878	1,492,161	155,832	957,650	37,030	280,708	707,278	3,437,944	1916
1917	45	411,538	5,366,218	1,124,884	7,823,960	216,285	1,362,634	114,276	1,065,983	57,543	540,904	1,921,554	16,159,699	1917
1918	32	50,723	781,992	6,605	53,336	267,538	1,715,159	235,860	2,532,553	63,472	754,637	624,198	5,837,677	1918
1919	35	64,346	1,186,413	421,215	3,854,113	525,541	1,687,787	210,883	2,618,504	73,618	910,968	1,295,626	12,257,785	1919
1920	11	62,654	1,725,252	4,669	28,860	48,849	3,225,368	24,502	221,688	25,846	370,215	166,520	2,571,385	1920
1921	23	102,967	1,991,368	404,713	1,870,385	30,831	123,608	89,412	798,541	25,567	199,609	653,490	4,983,511	1921
1922	16	48,566	945,178	2,225	13,273	65,552	283,395	111,771	744,656	20,615	222,641	248,729	2,209,143	1922
1923	18	47,402	860,000	475,849	2,429,800	97,081	471,790	122,000	785,000	15,806	150,407	758,138	4,696,997	1923
1924	12	69,369	1,182,358	5,945	39,192	134,360	651,014	87,879	688,950	20,096	216,043	317,649	2,777,557	1924
1925	23	112,023	2,098,683	553,904	3,179,302	43,345	207,546	173,215	1,902,289	29,183	432,349	911,670	7,820,169	1925
1926	14	44,673	532,408	2,107	15,095	112,204	573,411	123,469	1,163,286	27,972	365,826	310,425	2,650,026	1926
1927	21	97,594	2,115,410	578,923	3,669,941	38,129	225,654	135,802	1,358,020	41,796	588,314	892,244	7,957,339	1927
1928	14	60,081	1,207,981	5,597	41,091	146,356	833,114	89,923	777,472	23,419	294,816	325,376	3,154,024	1928
1929	22	111,898	2,203,496	727,621	4,639,076	156,683	911,584	101,635	1,044,372	34,007	439,778	1,131,844	9,238,306	1929
1930	12	352,194	4,890,921	3,712	18,486	64,234	237,123	122,691	1,240,876	29,775	407,912	572,606	6,795,318	1930
1931	18	83,728	1,316,348	705,580	2,486,377	55,189	177,000	76,025	569,699	28,359	293,022	948,881	4,842,446	1931
1932	10	78,319	897,006	1,677	5,779	146,151	381,116	60,740	330,385	24,024	168,625	310,911	1,782,912	1932
1933	19	125,738	1,340,000	543,340	2,643,528	37,039	171,742	44,568	292,684	21,091	221,776	771,776	4,669,910	1933
1934	21	340,787	3,632,587	3,296	17,331	72,841	251,991	69,080	517,901	14,089	74,024	500,093	4,493,834	1934
1935	14	51,714	720,076	369,620	1,652,161	15,636	68,402	70,514	534,956	9,243	91,396	516,727	3,066,991	1935
1936	9	60,063	813,510	1,152	7,598	86,070	315,465	30,568	292,528	4,708	43,427	182,561	1,472,528	1936
1937	13	56,983	925,160	327,973	1,676,692	18,759	91,696	31,747	323,976	6,412	76,750	441,874	3,094,274	1937
1938	13	139,152	1,824,396	455	2,641	7,697	32,193	10,268	100,753	2,371	36,800	159,943	1,996,783	1938
1939	14	43,561	669,202	282,271	1,574,317	15,080	76,786	54,905	485,760	2,446	33,508	398,263	2,839,573	1939
1940	9	62,748	1,122,684	2,947	17,432	23,405	114,798	30,654	231,878	1,674	15,734	121,428	1,502,526	1940
1941	9	110,758	2,140,457	153,924	1,203,657	25,423	187,224	46,213	553,230	4,769	62,354	341,087	4,146,922	1941
1942	10	258,488	5,255,888	851	7,965	2,223	17,748	6,862	97,693	1,204	26,389	269,628	5,405,683	1942
1943	10	19,149	424,339	62,129	637,730	243	2,432	26,292	390,847	2,864	12,456	110,677	1,467,804	1943
1944	3	37,214	830,719	299	3,313	...	...	373	5,883	1,064	21,240	38,950	861,155	1944
1945	6	53,532	1,176,467	305,245	2,724,176	1,184	12,467	18,802	258,076	3,639	63,511	382,402	4,234,697	1945
1946	20	271,311	10,108,350	91	2,184	47,099	989,079	7,118	163,714	6,841	268,120	332,460	11,531,447	1946
1947	25	7,516	315,956	639,426	13,423,416	139,131	2,532,194	79,450	2,254,404	29,143	875,098	894,666	19,401,068	1947
1948	22	91,268	5,005,792	4,645	128,328	245,133	5,558,820	70,659	2,049,606	27,043	903,578	438,748	13,646,124	1948
1949	23	94,627	2,959,425	557,740	9,305,100	162,532	2,381,000	55,910	1,273,000	8,594	224,000	879,403	16,142,525	1949
1950	20	128,385	4,984,208	2,277	61,855	512,997	10,752,172	116,655	3,454,279	8,215	191,712	768,529	19,444,226	1950
1951	25	156,461	5,815,837	441,605	9,419,295	233,468	3,922,457	88,511	2,200,801	11,275	281,794	931,320	21,640,184	1951
1952	20	114,707	5,153,778	817	51,026	292,318	5,147,662	172,910	4,079,424	7,869	178,654	588,621	14,610,544	1952
1953	22	164,848	6,041,592	440,860	8,239,810	144,542	1,761,160	54,901	1,012,224	3,974	106,937	809,125	17,161,723	1953
1954	21	507,719	16,364,291	1,429	32,314	272,455	4,292,256	29,252	742,533	5,054	119,568	815,909	21,550,962	1954
1955	23	81,913	3,088,120	411,280	9,108,207	88,672	1,745,505	63,526	1,886,722	10,177	253,698	655,568	16,082,252	1955
1956	15	70,285	2,865,168	320	7,382	47,068	987,721	59,481	1,836,178	3,582	100,475	180,736	5,796,924	1956
1957	20	189,406	7,750,894	228,930	5,426,423	88,623	1,615,502	87,339	2,486,215	6,497	186,205	600,795	17,465,239	1957
1958	19	415,645	16,299,811	2,374	51,853	145,715	2,397,298	38,351	1,190,264	2,106	66,327	604,191	20,005,553	1958
1959	23	130,246	6,251,808	175,318	4,207,632	122,586	2,574,306	71,688	2,508,980	7,510	240,320	507,348	15,783,046	1959
Aver.	21	195,962	7,461,550	170,521	3,660,580	194,844	3,519,604	78,261	2,139,762	6,626	172,569	646,214	16,954,065	Aver.

NOTE:- Figures for the last year in this table are from "PACIFIC FISHERMAN's" compilation. Those for previous years have been revised from official data. Fish from British Columbia are included; fish from Alaska omitted.

Columbia River

• Adverse conditions generally ascribed to the cumulative effect of power dams, plus the pressure of fishing on the high seas, again bore the Columbia River canned salmon pack to a new low in the history of this famous stream.

The pack, which since 1954 had ridden at a higher level, again dipped sharply, registering only 109,000 full cases, as compared with an average of 156,000 for the past 10 years.

Even this figure undoubtedly included a limited quantity of Puget

1959-COLUMBIA RIVER CANNED SALMON PACK

COMPANY	CANNERY LOCATION	CHINOOK							SILVERSIDE			BLUEBACK	CHUM	STEELHEAD TROUT			GRAND TOTAL (full cs)
		Fancy				Other Grades											
		1-lb. Flats & Ovals	1/2-lb. Flats & Ovals	1/4-lb. Flats & Ovals	TOTAL	1-lb. Talls (full cs)	1/2 & 1/4 lb. Flats (48 lbs)	TOTAL	1-lb. Talls (full cs)	1/2 & 1/4 lb. Flats (48 lbs)	TOTAL	1/2 & 1/4 lb. Flats (48 lbs)	1-lb. Talls 1/2-lbs, etc. (full cs)	1/2-lb. Flats & Ovals (full cs)	1/4-lb. Flats (48 lbs)	TOTAL	
Barbey Packing Corp.	Astoria, Ore.	---	7,105	---	7,105	---	2,011	2,011	---	---	---	1,013	---	425	---	425	10,554
Chinook Packing Co.	Chinook, Wash.	---	1,580	---	1,580	---	1,699	1,699	---	778	778	629	1,310	---	---	---	5,996
Columbia River Packers Assn.	Astoria, Wash.	---	13,791	2,403	16,194	458	9,811	10,269	19	5,543*	5,562	9,595	117	---	3,891	3,891	45,628
Cowlitz Fish Company	Kelso, Wash.	---	627	466	1,093	---	2,600	2,600	---	273	273	558	1,420	---	---	---	5,944
Point Adams Packing Co.	Hammond, Ore.	364	2,537	1,494	4,395	183	1,869	2,052	---	461	461	2,202	3,716	429	1,409	1,838	14,664
Portland Fish Co.	Portland, Ore.	---	2,210	17	2,227	---	1,183	1,183	---	1,307*	1,307	532	2,047	1	63	64	7,360
San Juan Fishing & Pkg. Co.	Astoria, Ore.	---	241	180	421	---	---	---	484	3,323	3,807	105	77	---	127	127	4,537
Union Fishermen's Co-op. Pkg. Co.	Astoria, Ore.	1,040	5,992	392	7,424	424	2,922	3,346	13	320	333	1,679	262	389	1,138	1,527	14,571
Wuori & Son	Astoria, Ore.	---	120	---	120	---	---	---	---	---	---	---	---	---	---	---	120
TOTAL		1,404	34,203	4,952	40,559	1,065	22,095	23,160	516	12,005	12,521	16,313	8,949	1,244	6,628	7,872	109,374

*Minor quantities of Pink Salmon included with Silversides.

1959-CANNED SALMON PACK OF COASTAL AREAS

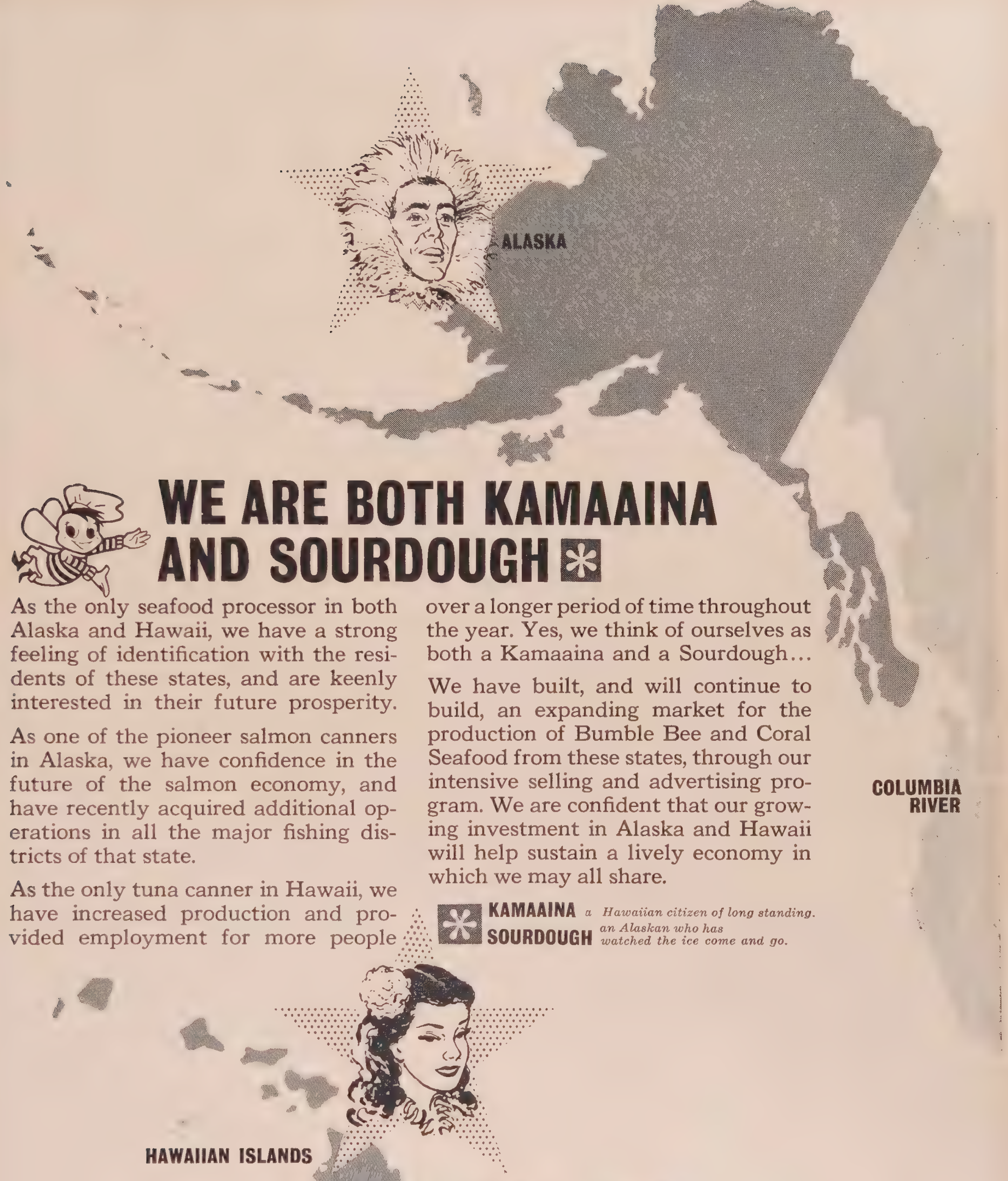
COMPANY	CANNERY LOCATION	CHINOOK or KING			BLUEBACK or SOCKEYE			SILVER or COHO			CHUM	GRAND TOTAL (Full Cases)
		1-lb. Talls	1/2-lb. Flats (8 doz.)	Total (Full Cases)	1/2-lb. Flats (8 doz.)	1/4-lb. Flats (48-lbs.)	Total (Full Cases)	1-lb. Talls	1/2-lb. Flats (8 doz.)	Total (Full Cases)	1-lb. Talls	
Chuck's Seafood Co.	Charleston, Ore.	---	---	---	---	---	---	20	100	120	---	120
Crown Packers, Inc.	Hoquiam, Wash.	---	---	---	---	---	---	647	---	647	---	647
Harbor Fish Co.	Aberdeen, Wash.	---	---	---	---	20	20	---	5	5	---	25
Harbor Seafoods	Bay Center, Wash.	---	40	40	---	---	---	---	55	55	850	945
TOTAL		---	40	40	---	20	20	667	160	827	850	1,737

Pacific Canned Salmon Packs and Values

Packs reduced to basis of full cases of 48 lbs. net. Values calculated from best data available.

Year	Alaska		Washington		Oregon		California		U.S. Total		British Columbia		Grand Total	
	Cases	Value ($)	Cases	Value ($)	Cases	Value ($)	Cases	Value($)	Cases	Value ($)	Cases	Value ($)	Cases	Value ($)
1939	5,239,211	35,110,571	478,246	3,944,000	251,070	3,640,898	...	...	5,971,527	42,695,469	1,539,070	10,449,945	7,510,597	53,145,414
1940	5,028,378	31,828,451	222,808	2,825,000	297,716	4,129,220	...	...	5,548,902	38,782,681	1,467,227	11,427,923	7,016,129	50,209,908
1941	6,906,503	57,466,702	491,311	6,162,000	399,840	5,925,444	1,125	13,500	7,798,779	69,567,646	2,248,870	18,406,545	10,047,649	87,974,191
1942	5,089,109	48,677,509	366,065	6,909,000	397,331	6,890,162	...	...	5,852,515	62,476,671	1,811,560	20,050,238	7,664,075	82,526,909
1943	5,396,509	58,579,194	149,175	2,309,000	130,707	2,857,246	767	16,000	5,677,158	63,761,440	1,258,221	11,673,469	6,935,379	75,434,909
1944	4,877,796	51,606,544	81,490	1,774,000	159,783	3,445,244	864	17,660	5,119,943	56,843,448	1,097,558	11,479,093	6,217,521	68,322,541
1945	4,338,692	44,528,964	414,258	4,845,000	155,292	3,287,812	2,755	38,000	4,913,335	52,699,776	1,739,311	18,409,962	6,652,646	71,109,738
1946	3,971,109	58,667,561	385,437	13,020,000	206,563	7,165,645	5,034	153,000	4,568,149	79,006,206	1,348,138	17,532,462	5,916,287	96,538,668
1947	4,302,466	91,297,885	957,429	21,420,000	338,852	11,133,690	13,917	513,000	5,612,664	124,364,575	1,505,157	24,900,000	7,117,379	149,264,575
1948	4,014,891	96,528,730	484,102	12,685,858	314,556	10,956,513	11,417	366,095	4,824,966	120,537,196	1,308,137	26,579,000	6,133,103	147,116,196
1949	4,391,591	81,263,168	973,740	17,481,282	158,472	4,665,290	1,113	21,240	5,524,916	103,130,980	1,436,461	27,654,189	6,961,380	131,085,469
1950	3,272,643	81,403,511	670,341	18,285,000	176,063	6,193,000	...	...	4,119,047	105,881,511	1,482,560½	30,155,177	5,602,056½	138,885,502
1951	3,631,918	84,649,330	906,252	21,357,974	175,091	6,631,198	...	...	4,713,261	112,638,502	1,955,475	46,261,080	6,668,736	158,899,582
1952	3,574,191	76,357,016	749,591	17,122,352	140,565	4,784,421	703	20,292	4,455,022	99,636,808	1,293,435	27,751,135	5,741,190	127,388,243
1953	2,934,667	60,987,334	848,422	18,680,750	127,808	4,063,675	436	15,425	3,911,333	83,747,184	1,821,269	35,060,600	5,732,602	118,807,784
1954	3,091,753	63,356,724	473,941	25,727,689	92,291	3,130,700	2,162	65,431	4,163,147	92,280,544	1,742,736	39,293,176	5,905,883	131,573,720
1955	2,457,969	58,696,300	764,719	17,569,902	138,250	4,996,355	347	30,611	3,286,765	81,293,168	1,406,100	31,644,673	4,692,865	112,937,841
1956	2,950,354	76,948,880	334,505	11,097,115	147,105	5,401,329	694	25,424	3,432,658	93,472,748	1,118,279	32,231,241	4,550,937	125,703,989
1957	2,441,894	62,564,386	624,842	18,296,970	118,161	4,948,224	2,174	78,131	3,187,071	85,887,711	1,424,964	35,872,414	4,598,406	207,647,830
1958	2,944,580	65,531,283	625,909	20,659,030	134,754	6,053,733	1,005	46,230	3,706,248	92,290,276	1,908,056	56,740,772	5,614,304	149,031,048
1959	1,600,886	45,053,361	520,905	16,611,300	97,554	4,558,269	...	...	2,219,345	66,222,930	1,089,799	35,534,451	3,309,144	101,757,381

NOTE: Data for current year are from original sources, and are based on origin of fish canned. Data for previous years generally are from official sources, which disregard origin in cases where fish caught in one area are canned in another.



WE ARE BOTH KAMAAINA AND SOURDOUGH ✻

As the only seafood processor in both Alaska and Hawaii, we have a strong feeling of identification with the residents of these states, and are keenly interested in their future prosperity.

As one of the pioneer salmon canners in Alaska, we have confidence in the future of the salmon economy, and have recently acquired additional operations in all the major fishing districts of that state.

As the only tuna canner in Hawaii, we have increased production and provided employment for more people over a longer period of time throughout the year. Yes, we think of ourselves as both a Kamaaina and a Sourdough...

We have built, and will continue to build, an expanding market for the production of Bumble Bee and Coral Seafood from these states, through our intensive selling and advertising program. We are confident that our growing investment in Alaska and Hawaii will help sustain a lively economy in which we may all share.

✻ **KAMAAINA** *a Hawaiian citizen of long standing.*
SOURDOUGH *an Alaskan who has watched the ice come and go.*

COLUMBIA RIVER PACKERS ASSN., INC. · ASTORIA, OREGON

Sound Sockeyes shipped to the Columbia for canning.

Most notable business transaction for many years in the Columbia River industry early in 1960 saw Nick Bez acquire control of the Union Fishermen's Cooperative Packing Co., one of the best known elements in the industry on the Columbia. The Union Cooperative was founded in 1896.

- Developments of late 1959 in the discussions between the United States and Canada over use of the Columbia River for power bring an indirect promise of enormous importance to the future of the salmon resource in two of North America's great streams—the Columbia and Fraser Rivers.

The spawning runs to the Upper Columbia were cut off a number of years ago by the Grand Coulee Dam, and salmon no longer migrate to the river above that obstruction.

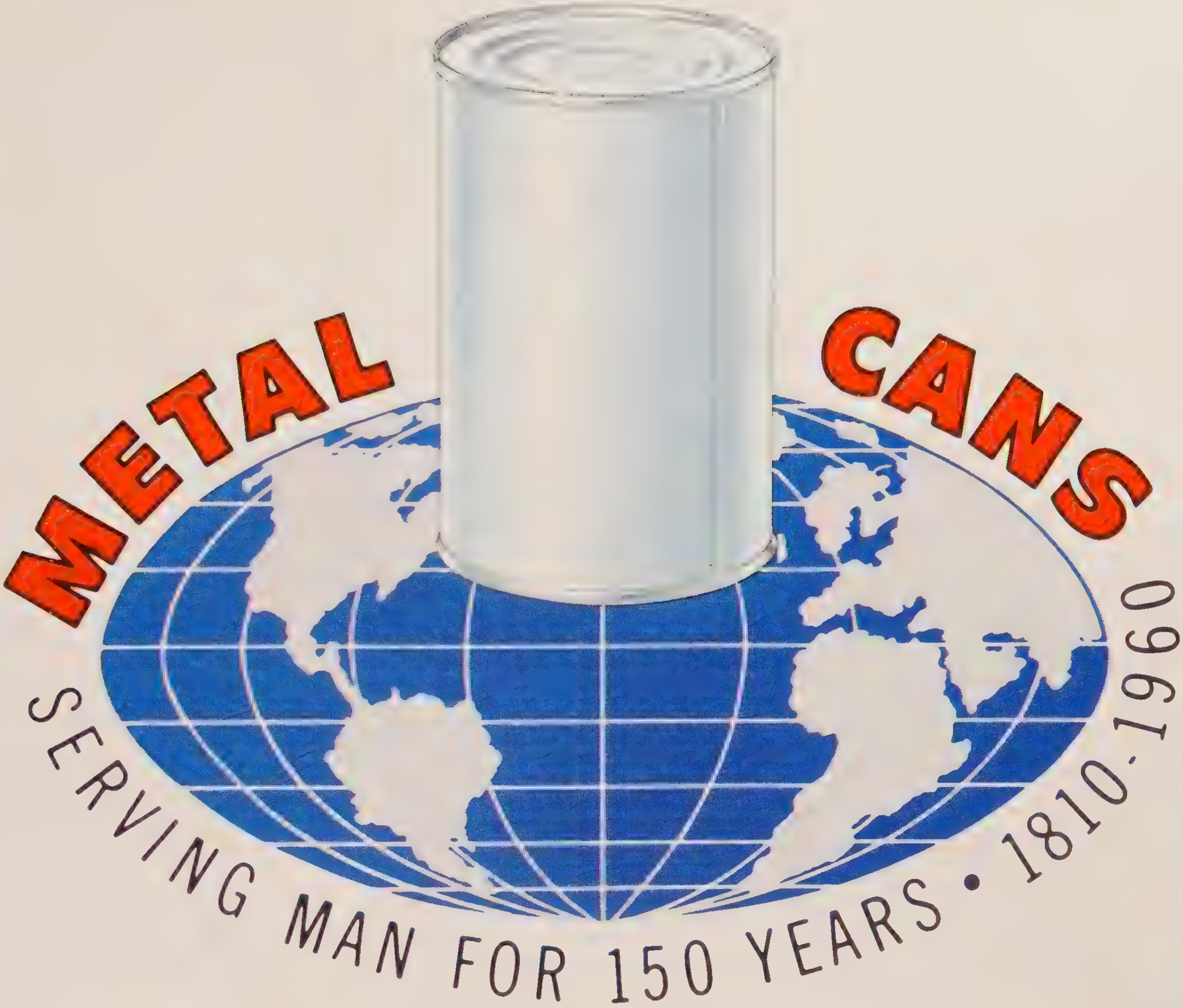
Most important tributary of the Columbia today from the standpoint of salmon maintenance is the Salmon River—appropriately named—in Idaho. Prospects for preserving this vital stream, as yet unimpaired, are believed to be greatly improved by ap-

COLUMBIA RIVER CANNED SALMON PACK

Salmon canning on the Columbia River commenced in 1866, with a pack of about 4,000 cases valued at $64,000; but no segregation by species is available prior to 1889. Production increased rapidly to a peak of 629,400 cases in 1883, valued at $3,147,000; then fell to 356,000, valued at $2,124,000, in 1887; the average output for intervening years being 351,091 cases, valued at $2,066,227.

YEAR	# of Canneries	CHINOOK		BLUEBACK		SILVERSIDE		CHUM or KETA		STEELHEAD TROUT		TOTAL		YEAR
		Cases	Value	Cases	Value	Cases	Value	Cases	Value	Cases	Value	Cases	Value	
1888	28		...	...	...	...	...	...	...	...	...	372,477	$2,234,862	1888
1889	21	266,697	$1,600,182	17,797	$101,051	...	...	...	...	25,391	$108,587	309,885	1,809,820	1889
1890	21	335,604	1,946,087	57,345	290,069	...	...	...	...	42,825	171,300	435,774	2,407,456	1890
1891	22	353,907	2,038,566	15,482	284,242	...	...	...	...	29,564	118,156	398,953	2,440,964	1891
1892	24	344,267	1,996,388	66,547	372,909	4,176	$20,880	...	...	72,348	288,892	487,338	2,679,069	1892
1893	24	288,773	1,559,374	30,459	152,295	29,107	116,428	2,311	$6,933	65,226	260,904	415,876	2,095,934	1893
1894	24	351,106	1,896,976	43,814	224,430	42,758	171,032	...	...	52,422	209,688	490,100	2,501,126	1894
1895	24	444,909	2,428,658	18,015	86,523	99,601	329,683	22,493	62,591	49,678	203,542	634,696	3,110,997	1895
1896	24	370,943	1,804,511	16,983	81,518	44,108	141,145	...	...	49,663	198,652	481,697	2,261,826	1896
1897	22	432,753	1,804,221	12,972	51,888	60,850	197,762	...	...	46,146	165,440	552,721	2,219,311	1897
1898	23	329,566	1,490,394	66,670	300,015	65,431	222,465	...	...	26,277	60,352	487,933	2,073,226	1898
1899	17	255,824	1,458,175	23,969	134,723	29,608	112,055	11,379	33,836	11,994	39,186	332,774	1,777,975	1899
1900	16	262,392	1,821,258	13,162	92,184	44,925	202,163	17,696	63,706	20,597	102,985	358,772	2,282,296	1900
1901	...	...	...	...	...	...	...	...	...	...	...	390,183	1,942,660	1901
1902	14	270,580	1,428,743	17,037	86,465	10,532	44,732	10,401	41,604	8,593	42,965	317,143	1,644,509	1902
1903	16	301,762	1,610,614	8,383	42,867	12,181	49,869	10,000	37,500	7,251	36,255	339,577	1,777,105	1903
1904	20	320,378	1,944,690	12,911	78,048	31,254	118,357	20,693	52,691	9,868	48,892	395,104	2,242,678	1904
1905	19	327,106	1,962,636	7,768	46,608	26,826	114,011	25,751	65,206	9,822	49,110	397,273	2,237,571	1905
1906	19	311,334	1,868,007	7,816	54,712	41,446	124,338	27,802	69,505	6,500	32,500	394,898	2,149,062	1906
1907	19	258,433	...	5,504	...	31,757	...	22,556	...	5,921	...	324,171	1,763,490	1907
1908	14	210,096	...	8,581	...	31,432	...	16,884	...	10,726	...	253,341	1,380,708	1908
1909	15	162,131	1,203,546	27,908	214,561	42,178	185,070	24,542	57,115	17,283	99,796	274,087	1,760,088	1909
1910	15	244,285	1,882,137	6,234	34,287	68,922	363,688	66,538	232,883	5,436	31,203	391,415	2,544,198	1910
1911	15	405,862	2,204,185	5,988	47,904	79,416	549,478	53,471	203,198	8,594	47,399	543,331	3,052,164	1911
1912	15	220,317	1,988,526	8,210	85,384	31,842	177,248	18,699	46,590	6,958	22,108	285,666	2,319,856	1912
1913	15	192,116	1,664,670	11,152	93,677	40,969	175,412	13,303	29,486	8,939	49,142	266,479	2,012,387	1913
1914	17	289,464	2,573,502	35,311	376,924	69,769	380,666	49,285	205,541	10,792	59,356	454,621	3,595,989	1914
1915	19	406,486	3,694,361	5,459	56,707	33,336	173,234	86,530	251,632	26,723	129,358	558,534	4,305,292	1915
1916	20	395,166	3,572,203	3,790	27,288	52,084	335,114	77,766	307,483	18,999	118,987	547,805	4,361,075	1916
1917	20	403,637	5,023,529	7,968	111,552	64,299	700,680	53,659	386,596	23,783	292,538	555,218	6,530,939	1917
1918	20	400,952	5,222,983	37,833	605,328	98,145	1,072,843	29,846	215,669	24,605	350,071	591,381	7,466,924	1918
1919	21	392,125	5,455,550	7,268	145,360	90,728	1,142,767	75,493	541,989	14,414	205,254	580,028	7,490,920	1919
1920	22	420,467	5,661,580	2,617	62,808	27,024	257,806	18,792	99,564	12,645	116,859	481,545	6,198,617	1920
1921	20	267,582	3,761,321	6,045	120,900	34,381	233,372	4,821	19,791	10,142	68,266	323,241	4,203,649	1921
1922	23	237,230	3,724,393	30,743	614,860	90,437	633,935	8,844	47,130	24,920	186,675	392,174	5,206,993	1922
1923	23	289,586	4,967,657	38,309	766,180	101,554	673,954	25,508	135,168	25,968	187,965	480,925	6,730,924	1923
1924	22	293,716	4,508,236	7,366	129,840	112,308	992,865	57,748	303,356	29,734	285,107	500,872	6,219,404	1924
1925	21	250,809	5,423,129	5,650	106,220	113,554	1,488,855	55,812	272,398	14,637	177,866	540,452	7,468,468	1925
1926	21	295,302	4,744,131	21,736	434,720	97,142	1,027,597	32,853	181,216	32,690	356,418	479,723	6,744,064	1926
1927	22	339,446	5,559,202	6,887	147,378	74,879	585,816	68,449	425,240	30,148	311,070	519,809	7,028,705	1927
1928	24	251,404	4,355,218	4,814	100,131	49,136	478,355	124,953	747,619	16,339	222,139	446,646	5,903,462	1928
1929	21	242,938	4,234,214	10,072	181,296	90,684	917,561	54,619	314,928	23,804	257,025	422,117	5,905,024	1929
1930	21	281,346	4,092,810	9,823	194,460	110,430	1,156,042	11,371	43,324	16,535	171,541	429,505	5,658,177	1930
1931	20	294,798	3,754,929	4,125	66,000	39,268	247,878	3,518	11,754	11,990	110,429	353,699	4,191,000	1931
1932	15	216,511	2,023,390	2,795	33,540	46,492	280,853	17,261	44,879	13,132	91,924	296,191	2,474,586	1932
1933	14	251,157	2,719,303	6,921	96,894	36,430	263,190	24,398	107,351	17,805	142,440	336,711	3,329,178	1933
1934	13	251,068	2,630,152	6,869	82,428	65,428	536,731	24,455	92,608	14,901	121,000	362,721	3,462,919	1934
1935	10	205,870	2,479,450	1,302	17,619	95,184	725,868	15,495	59,499	14,888	122,846	332,739	3,405,282	1935
1936	11	220,188	2,964,058	9,837	137,718	36,541	303,263	30,597	110,149	19,282	317,867	316,445	3,833,055	1936
1937	11	291,343	4,256,819	7,526	126,436	69,801	725,996	30,592	138,309	17,568	189,734	416,830	5,437,294	1937
1938	10	173,892	2,707,267	13,889	260,369	67,257	630,364	37,704	143,275	15,248	152,480	307,990	3,893,755	1938
1939	10	207,595	3,336,206	5,301	102,359	69,082	730,549	15,201	75,416	25,293	320,025	322,472	4,666,141	1939
1940	11	244,570	3,785,681	23,974	471,530	59,737	623,681	25,282	125,420	33,436	373,514	386,999	5,379,826	1940
1941	11	328,609	5,558,254	33,070	661,400	35,727	481,834	83,144	572,994	33,162	453,502	513,712	7,727,984	1941
1942	12	274,750	5,692,929	23,256	625,230	26,541	497,070	118,051	911,538	21,803	429,678	464,401	8,156,445	1942
1943	11	130,373	3,094,505	2,880	77,586	5,707	61,065	12,439	112,421	16,261	323,874	167,660	3,669,451	1943
1944	10	163,047	3,714,591	758	20,342	12,210	137,072	1,525	11,590	19,222	375,838	196,762	4,259,433	1944
1945	8	132,014	3,095,228	112	3,001	22,154	244,060	1,032	8,848	19,314	363,068	*175,670	3,723,456	1945
1946	11	159,872	5,940,740	9,726	369,588	6,883	206,490	§15,617	247,392	17,373	510,720	§209,471	7,274,939	1946
1947	10	250,318	8,613,000	15,079	664,000	42,789	1,278,000	17,121	252,000	21,999	650,000	347,306	11,457,000	1947
1948	12	235,310	9,342,000	3,339	147,000	39,425	1,099,000	26,201	498,000	19,977	615,000	324,242	11,701,000	1948
1949	12	133,347	3,682,000	**6,630	225,000	16,740	415,000	12,386	186,000	9,019	221,000	178,122	4,729,000	1949
1950	11	136,635	4,964,201	3,630	146,687	29,507	939,296	12,952	234,457	10,266	360,830	192,990	6,645,471	1950
1951	10	143,046	5,497,305	4,552	186,543	29,099	841,234	11,566	192,850	14,862	469,615	203,125	7,187,547	1951
1952	9	95,353	3,506,181	9,824	413,774	29,701	875,380	13,759	214,837	18,979	612,987	167,616	5,623,159	1952
1953	8	97,320	3,267,303	3,014	127,791	24,219	676,237	9,775	130,062	19,420	616,621	153,199	4,823,332	1953
1954	8	71,993	2,550,257	8,485	336,212	12,670	367,000	12,530	190,484	13,379	458,303	119,057	3,902,256	1954
1955	8	117,782	4,392,455	3,010	131,890	20,254	667,659	*6,774	126,875	13,737	462,857	*161,557	5,781,736	1955
1956	8	112,076	4,328,650	19,346	845,066	22,031	656,182	***5,497	130,233	8,171	295,294	167,121	6,255,425	1956
1957	8	87,420	3,738,912	8,496	470,061	28,725	1,024,847	§5,770	121,542	7,605	287,028	138,016	5,642,390	1957
1958	7	82,786	3,714,465	44,129	2,144,087	9,917	370,072	6,113	109,862	6,313	229,786	149,258	6,568,272	1958
1959	10	63,719	3,185,950	16,313	783,024	12,521	463,277	8,949	178,980	7,872	314,880	109,374	4,926,111	1959
Aver.	8	100,813	3,914,568	12,080	558,514	21,864	698,118	9,369	163,019	12,064	410,810	156,131	5,735,570	Aver.

NOTES:- "Average" is for the last ten years. Figures for the last year in this table are from PACIFIC FISHERMAN's compilation. Those for previous years have been revised from official data. *Includes 1,044 cases of Pinks canned from Puget Sound Fish. **Mostly Quinault River Bluebacks. ***Includes 588 cases of Pinks. §Includes 860 cases of Pinks.



Miracle of the Can:

how it changed the habits of the world

One hundred and fifty years ago, Peter Durand, an English merchant, was granted a patent for vessels of "pottery, tin or other metals of fit materials." Thus, the miracle of the can was born. This early "tin cannister" packaged foods in sealed containers . . . and changed the habits of the world.

Today, not only food but an almost infinite variety of things we use and enjoy comes in metal containers. Beverages, paint, petroleum, chemicals . . . these are just a few of the products brought to us conveniently, economically . . . by the "miracle of the can."

Can manufacturers everywhere, in the U.S. and abroad, are enthusiastically preparing to participate in the Sesquicentennial of the Invention of the Metal Can. You may want *your* company to take advantage of this great opportunity to tie in with this important observance. The Sesquicentennial may be used as a springboard for stories, advertisements and promotions that can serve each organization's special needs.

American Can Company is proud to be a part of this great industry as it observes its 150th anniversary. Canco's continuing program of research and development is pledged to provide still better packaging for the products of agriculture and industry.

American Can Company

BONNEVILLE DAM SALMON ESCAPEMENT

Year	Chinook	Steelhead	Silver	Blueback	Chum	Total	Year
1938	271,799	107,003	15,185	75,040	2,117	471,144	1938
1939	286,216	121,922	14,382	73,382	1,168	497,070	1939
1940	391,588	185,161	11,917	148,805	1,729	739,200	1940
1941	461,458	118,087	17,911	65,745	5,270	668,471	1941
1942	403,938	151,345	12,401	55,475	1,865	625,024	1942
1943	313,123	92,131	2,547	39,845	790	448,436	1943
1944	240,763	100,521	4,208	15,071	954	361,517	1944
1945	297,488	120,144	791	9,501	727	428,651	1945
1946	445,743	142,548	3,897	74,354	1,178	667,720	1946
1947	480,376	135,434	11,174	171,139	202	798,325	1947
1948	419,555	139,062	4,081	131,541	3,636	697,875	1948
1949	277,697	119,285	1,004	51,444	2,028	451,458	1949
1950	357,375	114,079	10,153	77,993	1,069	560,669	1950
1951	331,788	140,689	5,201	169,428	1,051	648,157	1951
1952	420,879	260,990	7,768	184,654	1,505	875,796	1952
1953	332,479	223,915	13,018	235,219	1,728	806,359	1953
1954	320,945	176,254	4,062	130,107	1,569	632,937	1954
1955	359,853	198,417	3,725	237,748	318	800,061	1955
1956	300,915	131,109	6,120	156,418	684	595,246	1956
1957	403,869	139,194	4,775	82,915	569	631,322	1957
1958	426,420	131,441	3,673	122,389	456	684,379	1958
1959	345,028	129,026	2,695	86,560	142	563,451	1959

parent agreement with respect to use of the Upper Columbia. The salmon industry of the Columbia River, striving desperately for protection of all possible spawning areas, believes that up-river development on the Columbia will relieve the demand for power which has been bringing the Snake River and its Salmon River tributary under pressure for fish-impeding dams.

The international accord between the two countries is concerned with the division of the additional power which will be developed by existing and under-construction projects as result of water storage on the Upper Columbia in Canada. These "downstream benefits" will (1) enable the Columbia's dams to supply the demand for power without destroying the Salmon River as a salmon sanctuary; (2) provide sufficient power to meet British Columbia's short-term needs, thus obviating the necessity for impairing the Fraser's enormous value as a source of Sockeye salmon; (3) eliminate the pressure proposal to divert a part of the Upper Columbia into the Fraser system, to the utter destruction of the Fraser as a source of salmon through forcing the multiple damming of that stream main stem and vital Thompson River tributary.

CANNED SALMON PACK OF COASTAL AREAS

Year	WASHINGTON					OREGON				California	GRAND TOTAL Full Cases	Year
	Blueback	Chinook	Silver & Steelhead	Chum & Pink	Total Full Cases	Chinook	Silver & Steelhead	Chum	Total Full Cases	TOTAL Full Cases		
1919	1,244	5,029	17,174	39,995	63,442	26,089	43,114	7,081	76,284	22,766	162,492	1919
1920	235	921	405	26	1,587	30,571	4,490	...	35,061	21,055	57,703	1920
1921	2,590	2,010	4,897	5,281	14,778	15,632	122	...	15,754	10,376	40,908	1921
1922	26,491	2,573	13,354	10,939	53,357	12,270	11,769	2,248	26,287	9,700	89,344	1922
1923	10,454	1.794	5,172	38,523	55,943	10,526	22,606	14,279	47,411	6,000	109,354	1923
1924	6,778	1,506	5,493	32,760	46,537	16,351	30,449	14,603	61,403	12,936	120,876	1924
1925	4,821	3,810	6,679	35,342	53,276	22,404	18,872	14,410	55,686	22,339	131,301	1925
1926	2,720	2,441	3,182	17,377	25,720	19,130	7,033	4,838	31,001	11,537	68,258	1926
1927	5,260	4,195	1,983	25,452	36,890	17,456	13,390	181	48,619	15,585	101,094	1927
1928	2,000	52	415	34,109	37,031	5,411	8,136	5,500	19,047	4,237	60,515	1928
1929	4,449	213	1,158	35,699	41,519	4,700	2,313	8,047	15,060	2,774	59,353	1929
1930	21,536	49	2,160	11,846	35,519	11,252	981	...	12,233	5,171	52,995	1930
1931	8.476	61	501	11,225	20,263	4,234	...	8,600	12,834	12,280	45,377	1931
1932	14,263	308	1,152	22,236	37,959	8,524	...	...	8,524	780	47,263	1932
1933	6,754	845	424	7,735	15,758	7,150	...	500	7,650	2,149	25,557	1933
1934	3,323	2,344	1,453	15,370	22,490	4,100	...	2,000	6,100	820	29,410	1934
1935	6,217	3.685	10,009	7,351	27,262	2,500	...	2,400	4,900	874	33,036	1935
1936	705	1,137	1,883	16,038	19,763	...	...	9,500	9,500	...	29,263	1936
1937	2,865	176	82	7,932	11,055	2,400	...	...	2,400	147	13,602	1937
1938	1,559	...	...	13,173	14,732	...	...	...	...	...	14,732	1938
1939	...	...	...	6,381	6,381	...	...	2,200	2,200	...	8,581	1939
1940	138	23	504	9,142	9,807	647	643	1,000	2,290	...	12,097	1940
1941	24	...	...	27,428	27,452	1,000	2,500	5,400	8,900	1,125	37,477	1941
1942	1,235	...	...	17,492	18,727	1,450	200	9,000	10,650	...	29,377	1942
1943	...	100	402	5	507	1,038	...	...	1,038	767	2,312	1943
1944	...	750	161	132	1,043	1,961	2,567	...	4,528	864	6,435	1944
1945	...	4,005	2,096	5,287	11,388	...	...	...	...	2,755	14,143	1945
1946	3,694	2,398	5,185	17,225	28,502	16,104	4,806	663	21,573	5,034	55,109	1946
1947	12,450	3,014	13,023	10,060	38,547	7,383	8,379	...	15,762	13,917	68,226	1947
1948	4,021	1,805	12,060	8,642	26,528	7,553	7,052	...	14,605	11,681	52,814	1948
1949	7,577	419	3,856	6,285	18,137	827	55	...	882	...	19,019	1949
1950	3,969	2,755	8,034	12,902	27,660	3,190	4,817	...	8,007	1,801	35,667	1950
1951	2,643	1,495	4,161	12,597	20,896	500	50	...	550	707	22,153	1951
1952	877	1,807	5,267	15,000	22,951	184	1,011	...	1,195	2,042	26,188	1952
1953	455	642	320	11,141	12,558	...	...	...	...	436	12,994	1953
1954	4,240	5	58	11,755	16,058	...	...	...	...	2,162	18,520	1954
1955	2,798	784	442	7,667	11,691	...	...	...	...	847	12,538	1955
1956	5,076	2,637	163	2,389	10,265	...	...	...	...	694	21,524	1956
1957	2,634	165	199	1,194	4,192	...	...	...	...	2,174	6,366	1957
1958	837	755	440	5,182	7,214	...	...	...	...	1,005	8,219	1958
1959	20	40	707	850	1,617	...	120	...	120	...	1,737	1959
Aver.	2,355	1,108	1,979	8,068	13,510	387	600	...	987	1,187	16,591	Aver.

NOTE:- All figures indicate "Full Cases" on a common basis of 48 lbs. net, equivalent to 96 Halves or 192 Quarters. For some years a few Puget Sound Pinks are included with Chums in the Washington Coast pack. A few Steelheads are sometimes canned in these areas. Where they occur, they are included with Silvers. The California pack consists almost entirely of Chinooks, but sometimes includes a few Silvers. "Average" is for the last ten years.

SALMON

British Columbia

- British Columbia salmon production in 1959 was the least in many years, although by narrow margin.

Costly strike during the early part of the season unquestionably was responsible for the disappointing total, 1,089,000 cases, the lowest since 1932. The margin, however, was not great, although a good deal below the excellent 10-year average of 1,558,000 cases.

Disappointment with the British Columbia production of 1959 was due largely to the comparison with the great pack of 1958, one of the biggest in Canada's history, and more than 800,000 cases — most of them Sockeye, above the 1958 output.

The British Columbia Sockeye pack of 1959, while it was only 256,000 cases, less than a quarter that of the previous year, nevertheless was above that of 1956, the cycle year.

Pinks were a grave disappointment for an odd-numbered year, although on the Fraser River the production was substantially better than the International Salmon Commission had forecast. While the 458,000 cases were narrowly better than the pack of 1958, they compared with an average of 610,000, and of course were very

1959 - BRITISH COLUMBIA CANNED SALMON PACK - 1959

	# Canneries	(Cases)							
		Sockeye	Springs	Steelheads	Bluebacks	Coho	Pinks	Chums	TOTAL
District No. 1 (FRASER RIVER & HOWE SOUND) Anglo-B.C. Packing Co., Ltd. - "Phoenix" British Columbia Packers, Ltd. - "Imperial" Canadian Fishing Co., Ltd. - "Home" Carlyle Packing Co. Johnston Fishing & Packing Co., Ltd. - "Glen Rose" Francis Millerd & Co., Ltd. - "Great Northern" Nelson Bros. Fisheries, Ltd. (Colonial) North American Fisheries Queen Charlotte Fisheries, Ltd. - "Bidwell" John Safarik & Sons Seafood Products, Ltd. Sea Specialties Tulloch Western Fisheries, Ltd. District No. 2A (SKEENA & NAAS AREAS) Anglo-B.C. Packing Co., Ltd. - "North Pacific" British Columbia Packers, Ltd. - "Sunnyside" Cassiar Packing Co., Ltd. - "Cassiar" Nelson Bros. Fisheries, Ltd. - "Port Edward" Babcock Fisheries, Prince Rupert District No. 2B (CENTRAL AREAS, etc.) British Columbia Packers, Ltd. - "Namu" J.H. Todd & Sons, Ltd. - "Klemtu" District No. 2C (QUEEN CHARLOTTE IS.) Queen Charlotte Canners Royal Fisheries Area 23 (BARKLEY SOUND) Port Alberni Fish Co.	23	256,420	15,760	1,254	10,134	214,029	458,229	133,973	1,089,799

NOTE: Figures are preliminary statistics of the Canadian Fisheries Department and are subject to later correction. Publication of statistics for the pack by districts in British Columbia has been discontinued, because present operating practice, in which fish from one district may be canned in another tends to confuse and impair information based on quantities canned within specific areas. Figures are for full cases of 48 one-pound cans or equivalent.

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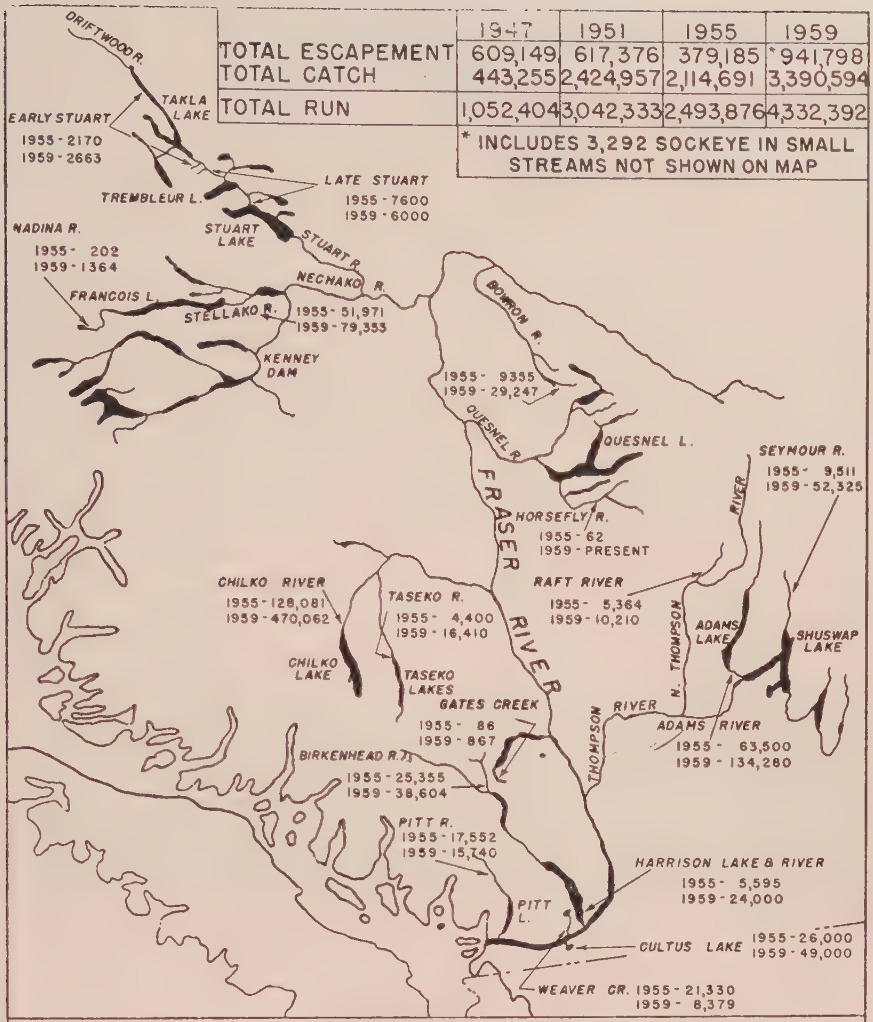

	1947	1951	1955	1959
TOTAL ESCAPEMENT	609,149	617,376	379,185	*941,798
TOTAL CATCH	443,255	2,424,957	2,114,691	3,390,594
TOTAL RUN	1,052,404	3,042,333	2,493,876	4,332,392

* INCLUDES 3,292 SOCKEYE IN SMALL STREAMS NOT SHOWN ON MAP

RACIAL ESCAPEMENT FIGURES – 1959 CYCLE

FRASER RIVER SOCKEYE

IPSFC

far below normal for the odd-numbered years.

Chums were again most disappointing. This species gives concern in British Columbia and on Puget Sound as well, undergoing as it is a low level of abundance in marked contrast with that of a few years previous.

● Even if operations had been normal, the 1959 season would have been only an average one for British Columbia's salmon industry, and in view of the records established in Fabulous '58 everyone would have been reasonably happy.

But a strike of fishermen that may rank as the costliest ever experienced upset the production schedule at the outset of the season. It lasted two weeks and occurred during a period (July 25-August 8) when fishing in some areas might have had its most bountiful returns. This was the first complete tieup of the fishing industry in the province, since it affected not only the commercial fishermen and salmon canneries, but also the shoreworkers up and down the coast, tendermen and almost everyone else directly associated with the fishing operation.

It was a costly strike. Estimates were that the industry lost $7,000,000 in landed value of net fishing in all areas affected, and one operator figured that the over-all economy was hit to the extent of nearly $20,000,000. Vancouver brokers reported there was evidence some orders for B. C. salmon had been diverted to Japan and other sources of supply as a result of the uncertainty created by the strike.

Fishermen expected to recoup some of their loss later in the season, but it was a safe estimate that about 150,000 cases of Sockeye were lost during the strike period, and another 100,000 cases of other grades.

● So far as abundance was concerned, Sockeyes showed in expected volume. Pinks were disappointing, with runs not as good as in the previous cycle year. Chums, after a brief display of plenty, petered out, especially in the

Fraser River Sockeye Salmon Catch by Cycles

British Columbia	1939-	568,943	1940-	1,033,000	1941-	2,116,723	1942-	5,047,599	British Columbia
Washington		555,233		654,091		1,558,554		2,935,192	Washington
TOTAL		1,124,176		1,687,091		3,675,277		7,982,791	TOTAL
British Columbia	1943-	349,011	1944-	1,003,826	1945-	969,444	1946-	4,240,198	British Columbia
Washington		242,077		435,443		706,464		3,551,306	Washington
TOTAL		591,088		1,439,269		1,675,908		7,791,504	TOTAL
British Columbia	1947-	355,035	1948-	752,691	1949-	1,020,799	1950-	894,469	British Columbia
Washington		88,220		1,089,091		1,056,792		1,220,893	Washington
TOTAL		443,255		1,841,782		2,077,591		2,115,362	TOTAL
British Columbia	1951-	1,288,162	1952-	1,154,383	1953-	1,992,343	1954-	4,722,463	British Columbia
Washington		1,136,795		1,113,475		2,032,437		4,806,258	Washington
TOTAL		2,424,957		2,267,858		4,024,780		9,528,721	TOTAL
British Columbia	1955-	1,108,081	1956-	894,836	1957-	1,360,760	1958-	5,241,617	British Columbia
Washington		1,006,610		906,872		1,689,265		5,257,316	Washington
TOTAL		2,114,691		1,801,708		3,050,025		10,498,933	TOTAL
British Columbia	*1959-	1,580,000							British Columbia
Washington		1,810,000							Washington
TOTAL		3,390,000							TOTAL

*Figures for 1959 are preliminary. Figures in this table, taken from reports of the International Pacific Salmon Fisheries Commission, represent the actual numbers of Sockeye known to have been caught in waters covered by the Fraser River Sockeye Salmon treaty. No reliable catch statistics for years prior to 1939.

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SALMON

British Columbia

north. Rivers Inlet and the Skeena were the areas hardest hit by the strike, which occurred when those waters indicated relatively strong runs.

The total salmon pack was less than 1,100,000 cases, lowest since 1951. It would have been somewhat larger had it not been for the export of an estimated 200,000 fish, mostly Chums, for canning or sale as fresh or frozen fish in the U.S. This might have been the equivalent of some 30,000 or more cases.

Ironically, more packers were operating in B.C. than usual during the 1959 season. In addition to the major operators, several small canneries opened up in the Vancouver area to take advantage of the open United Kingdom market. These newcomers had one advantage over the larger companies in that they could pay more for their fish, since they were not tied down by the commitments that to some extent restricted the other group.

As a result of the strike, American fishermen were able to keep steadily ahead of the Canadians in their catch under the jurisdiction of the International Pacific Salmon Fisheries Commission. Normally, the Commission's aim is to maintain an even balance between the fishermen of both nations relative to the Fraser River runs, but this was not a normal year, and because of the factors mentioned, plus a few others, it was a trying season for the conservation regulating agency, whose policy excludes from division

Fraser River-Puget Sound Sockeye Pack, by Cycles

British Columbia	1895-	395,984	1896-	356,984	1897-	860,459	1898-	256,101	British Columbia
Washington		65,143		72,979		312,048		252,000	Washington
TOTAL		461,127		429,963		1,172,507		508,101	TOTAL
British Columbia	1899-	480,485	1900-	229,800	1901-	928,669	1902-	293,477	British Columbia
Washington		499,646		228,704		1,105,096		339,556	Washington
TOTAL		980,131		458,504		2,033,765		633,033	TOTAL
British Columbia	1903-	204,809	1904-	72,688	1905-	837,489	1906-	183,007	British Columbia
Washington		167,211		123,419		837,122		182,241	Washington
TOTAL		372,020		196,107		1,674,611		365,248	TOTAL
British Columbia	1907-	59,815	1908-	74,574	1909-	585,435	1910-	150,432	British Columbia
Washington		96,974		170,951		1,097,904		248,014	Washington
TOTAL		156,789		245,525		1,683,339		398,446	TOTAL
British Columbia	1911-	58,487	1912-	123,879	1913-	719,796	1914-	198,183	British Columbia
Washington		127,761		184,680		1,673,099		335,230	Washington
TOTAL		186,248		308,559		2,392,895		533,413	TOTAL
British Columbia	1915-	91,130	1916-	32,146	1917-	148,164	1918-	19,697	British Columbia
Washington		64,584		84,637		411,538		50,723	Washington
TOTAL		155,714		116,783		559,702		70,420	TOTAL
British Columbia	1919-	38,854	1920-	48,399	1921-	39,631	1922-	51,832	British Columbia
Washington		64,346		62,654		102,967		48,566	Washington
TOTAL		103,200		111,053		142,598		100,398	TOTAL
British Columbia	1923-	31,655	1924-	39,743	1925-	35,385	1926-	85,689	British Columbia
Washington		47,402		69,369		112,023		44,673	Washington
TOTAL		79,057		109,112		147,408		130,362	TOTAL
British Columbia	1927-	61,393	1928-	29,299	1929-	61,569	1930-	103,692	British Columbia
Washington		97,594		61,044		111,898		352,194	Washington
TOTAL		158,987		90,343		173,467		455,886	TOTAL
British Columbia	1931-	40,947	1932-	65,769	1933-	52,465	1934-	139,238	British Columbia
Washington		87,211		81,188		126,604		352,579	Washington
TOTAL		128,158		146,957		179,069		491,817	TOTAL
British Columbia	1935-	62,822	1936-	184,854	1937-	100,272	1938-	186,794	British Columbia
Washington		54,677		59,505		60,259		134,641	Washington
TOTAL		117,499		244,359		160,531		321,435	TOTAL
British Columbia	1939-	54,296	1940-	99,009	1941-	171,290	1942-	446,371	British Columbia
Washington		43,511		59,354		110,605		263,458	Washington
TOTAL		97,807		158,363		281,895		709,829	TOTAL
British Columbia	1943-	31,973½	1944-	88,515	1945-	79,781½	1946-	331,292	British Columbia
Washington		19,179		37,509		53,054½		280,018	Washington
TOTAL		51,152½		126,024		132,836		611,310	TOTAL
British Columbia	1947-	27,857	1948-	61,650	1949-	80,629	1950-	81,510	British Columbia
Washington		7,516		90,441		80,547		116,458	Washington
TOTAL		35,373		152,091		161,176		197,968	TOTAL
British Columbia	1951-	134,400	1952-	115,814	1953-	176,097	1954-	486,805	British Columbia
Washington		118,151		114,638		178,323		501,496	Washington
TOTAL		252,551		230,452		354,420		988,301	TOTAL
British Columbia	1955-	95,377	1956-	84,296	1957-	99,398	1958-	418,704	British Columbia
Washington		85,136		84,052		119,985		450,066	Washington
TOTAL		180,513		168,348		219,383		868,770	TOTAL
British Columbia	1959-	118,800							British Columbia
Washington		135,130							Washington
TOTAL		253,930							TOTAL

*Figures for 1959 are approximate. Statistics represent 48-lb. cases of Sockeyes caught in the Fraser River district of British Columbia and adjacent waters of the State of Washington, whether canned in those districts or elsewhere -- and not including other Sockeye canned in those districts. This accounts in large part for the discrepancy between these statistics and those appearing elsewhere in this issue.

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SALMON

British Columbia

fish taken by one fleet while the other is voluntarily idle.

- All interests hoped that the settlement of the 1959 strike would bring about greater stability, inasmuch as the agreement reached provided for a schedule extending over two years. Basic prices for the various grades for 1959 and 1960, respectively, were: Sockeye, 31 and 32¢ a pound; Coho, Steelhead, 21 and 22¢; Pinks, 10¾ and 11¢; Chums, all areas to the end of August, 9¢. All these prices represented an increase over 1958, when corresponding prices for the various grades were: 28, 16, 9¼ and 7½¢.

But the season, for all its anxieties, was not without its bright spots. The catch of Fraser River Sockeyes totalled 3,390,000 fish, of which Canadian fishermen accounted for 1,580,000. It was the best run for the cycle since 1903 by a considerable margin. There have been only three years of this cycle since 1903 when the total international catch exceeded 2,000,000 fish. While the Canadian share was limited, the abundance for the international fishery demonstrated that conservation measures are paying off handsomely.

So much for Sockeye. The Fraser's Pink run was little if any better than the relatively poor run in the brood year 1957, although better than the Commission had predicted. Due to the good and well balanced escapement for the early and late runs, it now appears that a substantial increase can be expected in 1961. With a return to normal in the 1961 run, coupled with the good Sockeye run predicted, that year should be a profitable one for fishermen.

BRITISH COLUMBIA CANNED SALMON PACK

(CASES)

YEAR	Sockeyes Fraser River	Sockeyes Other Districts	Total Sockeyes	Springs	Cohoes & Bluebacks	Steelheads	Pinks	Chums	TOTAL Cases	YEAR
1903	204,809	163,908	368,717	25,657	51,918	...	27,382	...	473,674	1903
1904	72,688	250,536	323,226	38,675	66,351	...	...	37,642	465,894	1904
1905	837,489	243,184	1,080,673	28,359	44,458	...	13,970	...	1,167,460	1905
1906	183,007	276,672	459,679	32,344	69,132	...	68,035	...	629,460	1906
1907	59,815	254,259	314,074	26,098	87,900	683	118,704	...	547,459	1907
1908	63,126	291,897	355,023	28,164	81,917	1,137	76,448	...	542,689	1908
1909	542,248	298,193	840,441	19,017	61,918	...	46,544	...	967,920	1909
1910	133,045	432,870	565,915	28,789	74,382	140	34,613	58,362	762,201	1910
1911	58,487	325,022	383,509	48,456	119,702	100	305,247	91,951	948,965	1911
1912	108,784	335,778	444,762	80,437	165,102	207	247,743	58,325	996,576	1912
1913	684,596	287,582	972,178	41,049	69,822	...	192,887	77,965	1,353,901	1913
1914	185,483	351,213	536,696	49,328	120,201	...	220,340	184,474	1,111,039	1914
1915	89,040	387,002	476,042	58,104	146,956	2,927	367,352	82,000	1,133,381	1915
1916	27,394	187,395	214,789	66,726	183,623	9,982	280,644	240,201	995,065	1916
1917	123,614	116,234	339,848	76,276	157,589	11,740	496,749	475,273	1,497,475	1917
1918	16,849	259,610	276,459	107,354	191,068	15,916	527,745	497,615	1,616,157	1918
1919	29,628	339,817	369,445	100,551	199,993	4,493	346,639	372,035	1,393,156	1919
1920	44,598	306,807	351,405	118,301	120,033	2,395	520,856	84,626	1,187,616	1920
1921	35,900	128,014	163,914	49,752	124,348	1,220	192,906	71,408	603,548	1921
1922	48,744	250,870	299,614	39,596	109,276	1,657	581,979	258,204	1,290,326	1922
1923	29,423	305,224	334,647	27,142	119,141	1,760	440,932	418,055	1,341,677	1923
1924	36,200	333,403	369,603	27,456	119,989	1,811	657,538	568,916	1,745,313	1924
1925	31,523	361,120	392,643	73,499	199,180	1,996	445,400	607,904	1,720,622	1925
1926	83,589	253,406	336,995	69,189	181,894	2,165	772,993	701,962	2,065,198	1926
1927	57,085	250,947	308,032	58,977	181,968	1,746	247,617	562,109	1,360,449	1927
1928	26,530	177,011	203,541	18,856	156,757	865	792,362	863,256	2,035,637	1928
1929	60,407	220,899	281,306	19,377	196,444	672	477,969	424,982	1,400,750	1929
1930	107,896	369,782	477,678	38,804	190,594	1,656	1,111,937	401,114	2,221,783	1930
1931	54,688	236,776	291,464	27,147	102,175	1,326	206,995	55,997	685,104	1931
1932	83,447	200,908	284,355	76,060	188,971	1,168	223,716	306,761	1,081,031	1932
1933	53,481	204,626	258,107	20,266	159,052	1,459	532,558	293,630	1,265,072	1933
1934	145,579	232,303	377,882	29,784	225,430	1,282	435,364	513,184	1,582,926	1934
1935	76,415	274,029	350,444	21,920	231,492	596	514,966	409,604	1,529,022	1935
1936	165,651	249,373	415,024	29,854	246,061	1,068	591,532	597,487	1,881,026	1936
1937	103,137	222,637	325,774	16,171	133,208	844	585,576	447,602	1,509,175	1937
1938	186,794	260,659	447,453	15,531	301,123	1,035	400,876	541,812	1,707,830	1938
1939	73,216	196,672	269,888	16,103	245,096	797	620,602	386,584	1,539,070	1939
1940	86,215	280,188	366,403	17,741	224,524	1,205	213,911	643,443	1,467,227	1940
1941	149,715	305,582	455,297	50,476	391,407	3,454	427,766	920,470	2,248,870	1941
1942	418,491	248,080	666,571	24,745	211,139	4,649	270,622	633,834	1,811,560	1942
1943	72,507	92,382	164,889	10,658	186,042	3,095	530,188	363,348	1,258,221	1943
1944	107,431	140,283	247,714	19,362	183,546	3,926	389,692	255,316	1,097,557	1944
1945	122,384	205,617	329,001	12,800	218,887	2,922	825,512	350,188	1,739,311	1945
1946	381,580	161,447	543,027	8,100	100,154	4,115	116,607	576,133	1,348,138	1946
1947*	91,238	195,259	286,497	10,017	146,293	3,268	600,787	486,615	1,533,478	1947
1948	83,986	176,656	260,642	16,438	207,116	5,665	321,721	496,553	1,308,137	1948
1949	116,171	143,649	259,821	21,163	215,376	2,374	709,992	227,737	1,436,464	1949
1950	239,333	168,708	408,041	9,133	116,642	3,243	446,516	498,984	1,482,560	1950
1951	260,258	168,041	428,299	13,698	312,845	3,656	736,093	461,806	1,956,397	1951
1952	213,408	235,766	449,174	9,064	64,095	3,752	675,836	91,514	1,293,435	1952
1953	176,097	334,050	510,147	13,048	110,164	3,031	794,764	394,113	1,825,267	1953
1954	486,805	193,913	680,718	14,080	128,080	3,734	335,550	580,574	1,742,736	1954
1955	95,377	149,444	244,821	17,853	185,723	1,590	831,253	124,860	1,406,100	1955
1956	84,296	320,096	320,096	11,671	217,915	1,254	363,633	203,710	1,118,279	1956
1957	101,716	126,736	228,452	10,481	217,915	1,125	751,608	239,539	1,449,120	1957
1958	420,000	659,155	1,079,155	10,475	132,403	1,213	455,518	229,292	1,908,056	1958
1959	118,800	137,620	256,420	15,760	224,163	1,254	458,229	133,973	1,089,799	1959
10 Year Aver.	219,609	249,353	460,532	12,526	170,995	2,385	584,900	295,837	1,527,175	10 Year Aver.

NOTE: Figures for 1925 to 1958 have been corrected from official statistics. Figures for "Fraser River Sockeyes" include all Sockeyes canned in District No. 1, regardless where caught.

Figures for 1959 subject to further correction.

*Figures for 1947 include 28,321 cases packed from frozen fish of 1946 catch of various species.

Star-Kist packs America's leading brands of seafoods

This rugged, adventurous-looking fisherman is the highly memorable trademark now on all our new Star-Kist Tuna labels.

- **Eatwell Sardines**
- **Eatwell Mackerel**
- **Eatwell Anchovies**
- **Nine Lives Cat Food**

- **Star-Kist Chunk Light Tuna**
- **Star-Kist Solid Light Tuna**
- **Star-Kist Chunk White Tuna**
- **Star-Kist Solid White Tuna**
- **Star-Kist Dietetic Pack Tuna**

- **Star-Kist Frozen Tuna Pie**
- **Star-Kist Frozen Tuna Casserole**
- **Star-Kist Frozen Rock Lobster Tails**
- **Star-Kist Frozen Lobster Newburg**

Star-Kist Foods, *inc.*

TERMINAL ISLAND, CALIFORNIA / J. J. Bogdanovich, President

TUNA

California

- Tuna canning in the United States moved ahead strongly in 1959, topping the 1958 record by nearly 360,000 cases on the basis of preliminary figures.

For the second successive year the tuna pack exceeded 14 million cases, the data gathered for this *International Yearbook Number* showing 14,453,440 cases, against the official U.S. Bureau of Commercial Fisheries total of 14,094,101 cases for 1958.

Early analysis of the production data shows a strong gain in the lightmeat production of plants on the Atlantic and Gulf Coasts, Puerto Rico and American Samoa, which are grouped together in the official statistics.

- The United States tuna industry spent a troubled year in 1959.

The troubles stemmed from confusion in pricing, marketing and supply. There was plenty of fish in the ocean, better equipment than ever to catch them with, and more Americans than ever to buy and eat the canned tuna.

Early in 1959 it became apparent that only heroic action could keep the U. S. tuna industry as a whole from getting dangerously tangled in price-supply confusion.

Imports of frozen tuna, coming in increasing quantities, affected the prices for U. S.-caught tuna. At the same time, the demands of the fishermen's and engineers' unions kept the costs up. Caught in the middle, boat owners tied up their fleets, and tuna boats both in Los Angeles and San Diego Harbors spent almost three months at the dock.

Heroic action was needed, and heroic action was taken. After much preliminary work, a government-with-government meeting was arranged between United States representatives and those of Japan, which is not only the leading exporting nation but also the world's greatest fishing nation.

Although it was stipulated that prices and import controls were not to be discussed at the meeting, and were not, the main result of the September gathering was a formal Japanese declaration that exports to the United States would henceforth be carefully examined and quantities would be exported only to fill out the needs of canners that United States fishermen cannot supply.

Besides this declaration, the meeting of minds accomplished other worthwhile ends. The nations and their tuna industries agreed to study the world tuna supply, the methods by which the world tuna crop can best be harvested, with regard to conservation as well as use, and the best procedures for order-

1959 UNITED STATES TUNA PACK

REGION	Albacore Standard Cases	Lightmeat Standard Cases	Total True Tuna Standard Cases	Bonito & Yellowtail Standard Cases	GRAND TOTAL Std. Cases
California: San Diego	210,841	1,833,700	2,044,541	----	2,044,541
Los Angeles Harbor	1,334,200	6,716,584	8,050,784	43,774	8,094,558
Central Ports	98,171	557,471	655,642	----	655,642
TOTAL California	1,643,212	9,107,755	10,750,967	43,774	10,794,741
Oregon, Washington & Hawaii	929,170	611,303	1,540,473	----	1,540,473
Atlantic & Gulf Coasts, Puerto Rico & American Samoa	803,299	1,314,927	2,118,226	----	2,118,226
GRAND TOTAL U.S. TUNA	3,375,681	11,033,985	14,409,666	43,774	14,453,440

ly marketing of tuna in the U. S. and in Japan.

- Perhaps even more important to the U. S. industry, although not as spectacular as the published results, was the fact that the industry went into the meetings as a unified, harmonious body. It presented its needs with one voice, and from all accounts its own Government, as well as the Japanese, was somewhat surprised at the unanimity of sentiment in an industry that has not always been together on issues.

Meanwhile, prices for U. S.-caught tuna dipped from the $230-$270 level ($230 per ton for Skipjack and $270 for Yellowfin) to levels generally around $210 and $250. The prices

CALIFORNIA PACK OF CANNED TUNA AND RELATED FISHES

(Cases)

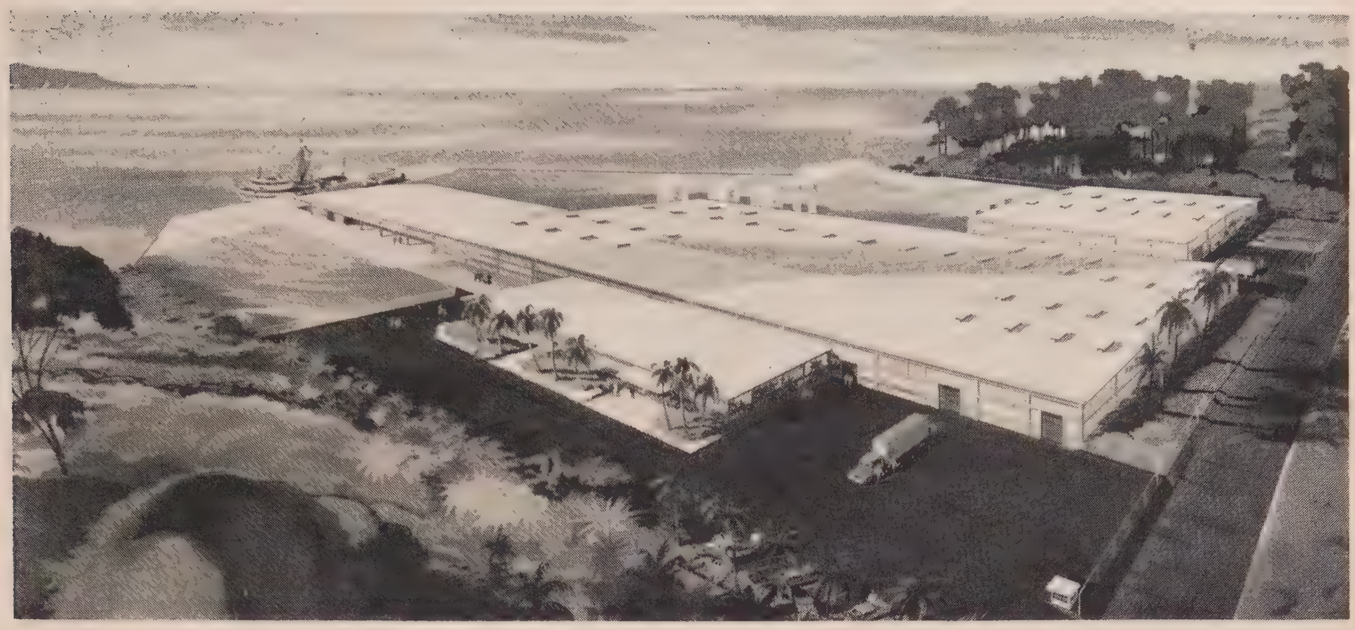
	SAN PEDRO DISTRICT								SAN DIEGO DISTRICT										
YEAR	Yellowfin	Bluefin	Skipjack	Albacore	Flakes	Tonno	Tunalike (Bonito & Yellowtail)	TOTAL	Yellowfin	B'uefin	Skipjack	Albacore	Flakes	Tonno	Tunalike (Bonito & Yellowtail)	TOTAL	San Francisco & Monterey	GRAND TOTAL	YEAR
1926	122,968	67,525	189,581	43,660	11,786	90,689	47,710	573,919	96,363	2,758	85,389	14,555	4,162	40,864	15,416	259,507	.....	833,426	1926
1927	185,423	40,363	155,755	105,598	7,816	197,275	26,660	718,890	200,635	9,645	226,420	20,481	435	10,221	20,147	487,984	.....	1,206,874	1927
1928	323,813	85,994	64,061	99,093	7,577	106,038	14,759	701,335	287,770	46,348	130,430	658	9,156	11,783	9,798	495,943	.....	1,197,278	1928
1929	199,292	67,091	128,436	130,212	7,707	88,454	49,943	671,135	458,687	22,637	218,696	2,426	10,906	31,351	13,027	757,730	.....	1,428,865	1929
1930	262,278	302,660	82,282	143,748	11,508	57,110	73,049	932,635	739,616	6,944	185,848	1,783	18,053	17,875	17,635	987,754	.....	1,920,389	1930
1931	182,115	46,462	166,091	144,796	12,850	35,514	37,289	625,117	431,229	....	112,307	177	6,591	706	3,006	554,016	.....	1,179,133	1931
1932	275,263	8,510	101,626	52,215	11,517	42,247	34,348	525,726	403,050	177	203,381	.....	4,774	....	10,881	622,263	13,162	1,161,151	1932
1933	258,982	7,580	74,728	49,391	10,907	41,200	19,281	462,069	678,810	1	198,313	.....	2,183	....	50,797	930,104	.....	1,392,173	1933
1934	317,846	325,350	71,350	82,182	22,402	55,163	38,961	913,254	780,066	6,683	195,798	.....	8,100	....	23,409	1,014,056	.....	1,927,310	1934
1935	306,202	413,630	88,746	107,501	33,909	81,660	108,203	1,139,851	948,276	24,871	249,747	4,648	7,749	545	101,039	1,336,875	.....	2,476,726	1935
1936	343,234	311,987	184,930	53,849	9,906	57,797	85,404	1,047,107	1,074,811	22,390	295,330	35	14,967	740	131,802	1,540,075	.....	2,587,182	1936
1937	416,611	188,432	276,165	83,123	34,534	136,612	88,870	1,224,347	1,165,866	27,103	487,751	8,036	15,904	1,125	88,182	1,793,967	.....	3,018,314	1937
1938	273,365	273,358	151,081	265,034	47,092	67,404	119,270	1,196,604	1,010,814	49,840	221,917	24,355	17,384	....	77,818	1,402,128	....	2,598,732	1938
1939	578,727	191,456	212,042	281,666	41,104	70,022	151,241	1,526,258	1,348,565	27,020	257,258	46,372	31,136	7,318	32,463	1,750,402	28,637	3,305,297	1939
1940	536,391	267,343	306,447	122,484	85,459	124,094	106,225	1,548,443	1,469,428	45,867	529,776	19,304	141,861	60,138	49,624	2,315,998	3,953	3,868,394	1940
1941	308,886	136,333	109,563	73,024	40,545	33,530	161,835	863,716	1,016,759	32,369	323,466	10,145	130,004	308	144,331	1,657,382	9,071	2,530,169	1941
1942	214,391	250,685	128,980	128,670	39,880	23,479	34,542	820,627	545,517	28,413	590,594	104,578	111,096	....	35,138	1,415,336	6,257	2,242,220	1942
1943	303,881	162,844	88,203	187,052	120,548	17,239	96,595	976,362	392,114	12,021	294,964	227,347	381,967	....	12,298	1,320,711	11,342	2,308,415	1943
1944	341,687	357,531	105,863	125,632	234,639	15,365	20,817	1,201,534	485,796	16,473	257,994	307,806	530,368	....	7,521	1,605,958	1,685	2,809,177	1944
1945	460,982	275,116	89,279	148,286	452,292	16,198	34,628	1,476,781	1,037,009	22,742	458,895	329,251	96,162	....	32,524	1,976,583	3,078	3,456,442	1945
1946	663,814	304,248	202,729	141,629	558,026	.....	88,589	1,959,035	1,549,557	28,753	445,560	233,622	268,767	....	63,762	2,590,021	6,341	4,555,397	1946
1947	765,426	342,309	209,281	104,726	417,644	7,403	308,540	2,155,329	1,875,087	6,557	695,170	145,300	323,511	26,359	68,927	3,140,911	61,258	5,357,498	1947
1948	969,732	94,190	200,693	290,811	477,769	22,663	270,404	2,326,608	2,364,819	1,991	729,505	426,255	366,828	....	39,420	3,964,818	55,526	6,346,952	1948
1949	614,847	38,142	157,373	289,063	1,330,358	78,821	49,195	2,557,799	2,059,468	2,889	904,793	535,013	420,491	4,038	24,884	3,951,576	81,021	6,590,396	1949
1950	742,815	14,786	266,809	586,683	2,456,705	202,368	14,595	4,284,761	913,458	3,300	495,462	482,894	1,898,568	54,988	7,741	3,856,411	143,273	8,141,172	1950
1951	611,673	.....	.....	337,456	2,670,876	104,235	77,229	3,801,469	974,469	....	.....	269,774	2,122,698	58,042	10,260	3,435,243	293,873	7,530,585	1951
1952	3,089,057	.....	.....	814,198	1,216,024	86,948	196,453	5,402,680	1,354,515	....	.....	509,385	459,840	45,328	34,234	2,403,302	296,860	8,102,842	1952
1953	3,009,258	*	*	1,097,602	1,179,273	122,091	100,252	5,508,476	1,723,934	*	*	500,615	516,922	53,911	69,866	2,865,248	250,385	8,624,109	1953
1954	725,729	.....	.....	699,810	4,377,438	166,011	27,126	5,946,114	812,525	....	.....	249,972	2,147,546	64,155	48,409	3,322,607	369,962	9,638,683	1954
1955	672,464	.....	.....	903,814	4,039,030	160,694	2,501	5,778,503	498,611	....	.....	244,599	1,476,445	42,186	2,218	2,264,059	507,116	8,549,678	1955
1956	565,289	.....	.....	613,312	4,717,583	122,074	3,978	6,022,236	586,218	....	....	234,984	2,179,516	60,745	2,516	3,063,979	576,364	9,662,579	1956
1957	501,952	.....	.....	830,372	4,942,747	102,544	3,924	6,381,539	519,059	....	.....	255,225	1,972,937	64,173	4,364	2,815,758	528,147	9,725,444	1957
1958	581,821	*	*	671,668	5,724,674	118,296	101,461	7,197,920	443,563	*	*	126,264	1,965,899	56,017	7,938	2,599,681	621,066	10,418,667	1958
1959	5,697,900	*	*	1,334,200	915,600	150,000	50,000	8,148,000	1,500,000	*	*	153,400	293,700	40,000	*	1,987,100	659,641	10,794,741	1959

*Segregation of lightmeat tuna pack as to species, and amounts of chunks, flakes and tonno not available at presstime. Accordingly, all lightmeat tuna and special packs made from lightmeat have been shown under Yellowfin. Albacore totals also include chunks, flakes and tonno packed from this species.

1959 - Pacific Coast Frozen Tuna Imports by Months

(TONS)

AREAS AND GRADE	Nov. '58	Dec. '58	Jan. '59	Feb.	March	April	May	June	July	August	Sept.	Oct.	TOTAL
To California													
Albacore	760	848	895	1,881	2,549	2,085	433	564	83	745	455	883	12,181
Lightmeat, etc.	4,192	6,131	6,942	4,835	4,221	6,196	5,032	6,456	7,574	5,088	3,489	5,747	65,993
1958-59 Total	4,952	6,979	7,837	6,716	6,770	8,281	5,465	7,110	7,657	5,833	3,944	6,630	78,174
1957-58 Total	4,734	3,917	4,898	5,129	5,047	3,942	5,766	6,901	9,603	6,872	6,679	6,971	70,459
To Oregon & Washington													
Albacore	682	1,515	255	350	436	125	170	---	---	848	988	400	5,769
Lightmeat, etc.	20	388	545	102	300	729	65	17	77	773	261	---	3,277
1958-59 Total	702	1,903	800	452	736	854	235	17	77	1,621	1,249	400	9,046
1957-58 Total	923	312	1,035	430	332	955	361	1,338	1,387	2,274	2,389	571	12,307
Pacific Coast													
1958-59 Total	5,654	8,882	8,637	7,168	7,506	9,135	5,700	7,127	7,734	7,454	5,193	7,030	87,220
1957-58 Total	5,657	4,229	5,933	5,559	5,379	4,897	6,127	8,239	10,990	9,146	9,068	7,542	82,766



Star-Kist Tuna in Puerto Rico—Architect's drawing of the new cannery under construction at Mayaguez, at the extreme western end of Puerto Rico. This plant, which is due to be in operation this year, will be modern in every respect and a show place of American seafood packing for all the world to see.

were odd dollars above the minimum when the year closed.

The long tie-up ended in July when the San Pedro purse seiners came to an agreement with their fishermen and engineers to suspend the $230-$270 price floor and fish for more "realistic" prices in view of the world supply and demand of tuna.

The net result was that the total domestic-caught tuna receipts were down about 20,000 tons, from 145,139 in 1958 to 125,123 last year.

● The year 1959 also saw entry in real force of the big purse-seiner as a prime factor in the California tuna fishery. At year's end, no less than 20, possibly more, former clippers had been converted to purse seiners, and all of them seemed to be doing well. The *Sun King*, first of the current series of conversions, fishing from Peru, was reported to have caught 3500 tons of tuna during the year.

Conversions were continuing to keep the shipyards busy, and at the end of the year half a dozen big bait boats were either in process of being converted, or were planning to tie up for conversion at the conclusion of their current trips. It will surprise nobody if the 1960 total of conversions equals or exceeds the 20 jobs done in 1959.

● Star-Kist Foods, Inc., got under way on construction of its Puerto Rico cannery at Mayaguez. Van Camp Sea Food Co. has a cannery already in op-

Deliveries of Tuna in California

(Pounds)

Year	Albacore	Bluefin	Bonito	Skipjack	Yellowfin	Shipments*		TOTAL
						Light Meat	White Meat	
1926	2,469,921	6,526,533	3,121,604	20,951,348	12,564,986			45,634,392
1927	4,579,367	4,898,386	1,718,008	33,805,960	25,934,045			70,935,766
1928	283,321	13,700,870	2,105,903	15,948,104	32,253,206			64,291,404
1929	269,101	7,796,857	2,918,544	27,007,013	37,444,924			75,166,439
1930	283,117	21,921,282	5,164,260	20,485,587	56,654,181			104,508,427
1931	37,322	3,534,030	3,079,673	16,506,761	36,579,480			59,737,266
1932	619,694	1,071,206	2,862,286	21,636,577	36,923,410			63,113,173
1933	487	560,492	2,252,199	16,687,308	51,075,630			70,576,116
1934	171,105	18,357,828	3,232,694	14,830,194	60,913,160			97,474,981
1935	2,447,528	25,173,083	7,896,484	17,197,186	72,294,133			125,008,414
1936	956,771	18,924,883	7,215,916	27,006,105	78,352,644			132,456,319
1937	3,196,770	12,693,922	7,808,070	47,104,092	91,522,458			162,325,312
1938	12,522,594	17,728,031	7,839,993	22,653,631	78,288,144			139,032,393
1939	12,346,858	11,835,715	9,918,875	30,120,891	110,417,801			174,640,140
1940	5,588,670	19,970,268	5,290,926	56,650,155	113,898,209			201,398,266
1941	3,276,257	9,519,012	10,257,602	25,585,468	76,701,760			125,340,099
1942	10,621,193	12,844,564	1,650,689	38,715,182	41,167,441			104,999,069
1943	21,384,864	10,178,170	2,281,884	28,893,784	49,261,328			117,004,030
1944	17,865,866	20,332,011	818,871	29,964,377	62,236,029	972,721**	2,535,547**	134,761,422
1945	21,767,581	20,594,059	2,714,181	33,273,407	86,130,656	1,392,078	60,901	165,932,863
1946	18,064,047	22,031,748	5,625,648	40,877,307	126,425,688	1,028,674	...	214.056,112
1947	13,145,780	20,837,634	13,697,171	52,315,449	149,066,794	1,539,245	269,397	250,871,470
1948	36,425,846	6,528,807	9,135,126	58,752,316	191,635,651	168,544	1,141,747	303,788,037
1949	44,017,014	4,389,471	1,829,541	78,564,030	184,972,285	691,199	254,664	314,718,204
1950	61,746,421	2,738,963	695,614	124,724,565	182,224,422	11,360,744	4,378,420	387,869,149
1951	30,677,931	3,862,418	776,803	115,778,923	160,547,928	16,018,444	17,520,891	345,183,338
1952	49,789,314	4,576,685	2,142,157	84,734,226	178,376,101	11,301,336	22,525.248	353,445,067
1953	33,834,626	9,172,855	3,102.647	122,306,183	132,086,346	16,888,789	46,186,816	363,578,262
1954	26,107,290	21,024,820	2,319,060	153,756,190	119,401,795	47,434,639	38,466,383	408,510,177
1955	29,001,811	13,609,177	136,990	101,837,635	122,291,864	60,072,312	44,844,675	371,794,464
1956	37,042,581	12,625,968	127,614	120,153,222	149,280,994	71,600,590	20,322,775	411,153,744
1957	43,466,941	20,312,596	219,031	90,498,163	136,955,837	67,174,436	39,564,027	398,191,031
1958	27,095,398	31,048,845	5,546,806	122,855,653	124,095,185	27,485,321	125,098,739	463,225,947

* These are largely importations into California, but included are some fish caught by California fleet and landed outside of the United States.

** Shipments not available prior to 1944.

HERE'S WHERE WE PUT THE (oh!) IN TUNA...

...and in a warm "hello" for you!

Whenever you're in the San Diego area, we hope you'll visit our "Show Cannery of the West." We're at 28th and Harbor Drive...and the welcome mat is always out!

Who put the (oh!) in tuna? Breast·O'·Chicken, O'course!

© B-O-C TUNA, INC.

Shipments of Tuna Received in California

(Pounds)

Year	Albacore	Yellowfin	Skipjack	Bluefin	Bigeye	Other	TOTAL
1944	2,535,547	72,859	899,862	...	...	...	3,508,268
1945	60,901	1,317,589	74,489	...	...	...	1,452,979
1946	...	817,987	210,687	...	...	...	1,028,674
1947	269,397	1,392,590	146,655	...	...	...	1,808,642
1948	1,141,747	...	364	168,180	...	...	1,310,291
1949	254,664	673,632	11,911	...	...	5,655	945,863
1950	4,378,420	7,961,748	3,251,118	107,878	...	40,000	15,739,164
1951	17,520,891	13,120,725	2,858,749	2,112	...	36,858	33,539,335
1952	22,525,248	7,141,589	4,157,441	...	...	2,306	33,826,584
1953	46,186,816	8,458,606	8,347,736	62,447	20,000	...	63,075,605
1954	38,466,383	29,701,898	15,707,756	771,147	1,249,937	3,901	85,901,022
1955	44,844,675	40,526,143	18,687,354	343,346	512,534	...	104,914,052
1956	20,322,775	54,604,513	16,165,120	162,875	668,082	...	91,923,365
1957	39,564,027	45,085,798	20,938,140	323,024	827,474	...	106,738,463
1958	27,485,321	93,979,964	25,303,518	242,820	5,386,894	185,543	152,584,060

eration in Puerto Rico, as well as facilities in Samoa and in Ecuador. Star-Kist has a production facility in Peru. Westgate-California continued to operate and expand its freezing plant at Paita, Peru, from which frozen tuna is shipped to San Diego for canning.

Far-reaching corporate changes took place, and others were promised. Westgate-California was preparing to move to a new plant in San Diego following the realignment of some of the other parts of the C. Arnholt Smith industrial complex, in which Westgate was an important component. Announcements were published to the effect that merger was under study by Van Camp Sea Food Co. and California Packing Corporation, said to be the world's largest food packing firm.

Two new tuna clippers were launched by National Steel & Shipbuilding Co., to be operated by National Marine Terminal, Inc., fishing for Westgate-California.

Several vessels were retired from the California fleet, some by transfer to Puerto Rican or Peruvian waters, others by sinking. At least one big clipper was reported fishing from a base in Ghana, West Africa, a newly-developed fishery in which U. S. canners were showing a lively interest.

SAN DIEGO CANNED TUNA BY GRADES

YEAR & TYPE	Solid	Standard	Chunks	Grated & Flakes	Dark & Light	Tonno	Misc.	TOTAL
1951								
Lightmeat	872,560	101,909	1,444,755	530,229	2,678	58,042	4,991	3,015,164
Whitemeat	180,887	88,887	100,926	39,119	.....	......	.....	409,819
Yellowtail & Bonito	....	270	....	12,175	.....	......	.....	12,445
TOTAL	1,053,447	191,066	1,545,681	581,523	2,678	58,042	4,991	3,437,428
1952								
Lightmeat	475,181	26,455	902,647	344,532	.....	36,868	1,009	1,786,692
Whitemeat	309,319	....	225,255	109,774	.....	7,708	.....	652,056
Yellowtail & Bonito	....	80	3,035	31,117	.....	......	.....	34,232
TOTAL	784,500	26,535	1,130,937	485,423	.....	44,576	1,009	2,472,980
1953								
Lightmeat	492,617	56,386	1,123,132	368,405	3,810	44,134	2,858	2,091,342
Whitemeat	351,945	....	142,192	141,440	557	10,875	.....	647,009
Yellowtail & Bonito	....	68	14,114	55,684	.....	......	.....	69,866
TOTAL	844,562	56,454	1,279,438	565,529	4,367	55,009	2,858	2,808,217
1954								
Lightmeat	763,880	48,645	1,614,929	384,897	4,206	64,155	.....	2,880,712
Whitemeat	249,972	....	84,809	58,563	.....	......	142	393,486
Yellowtail & Bonito	33	3,346	1,201	43,829	.....	......	.....	48,409
TOTAL	1,013,885	51,991	1,700,939	487,289	4,206	64,155	142	3,322,607
1955								
Lightmeat	463,761	34,850	1,144,899	266,162	.....	42,186	.....	1,951,858
Whitemeat	243,998	601	23,720	41,537	.....	......	.....	309,856
Yellowtail & Bonito	....	24	34	2,160	.....	......	.....	2,218
TOTAL	707,759	35,475	1,168,653	309,859	.....	42,186	.....	2,263,932
1956								
Lightmeat	588,264	44,877	1,773,473	335,296	.....	58,135	4,314	2,804,359
Whitemeat	271,163	283	59,769	48,285	.....	......	504	380,004
Yellowtail & Bonito	....	....	30	2,486	.....	......	.....	2,516
TOTAL	859,427	45,160	1,833,272	386,067	.....	58,135	4,818	3,186,879
1957								
Lightmeat	493,786	25,273	1,436,988	329,541	.....	63,912	3,308	2,352,808
Whitemeat	254,913	312	131,511	70,591	.....	261	998	458,586
Yellowtail & Bonito	....	452	482	3,430	.....	.....	....	4,364
TOTAL	748,699	26,037	1,568,981	403,562	.....	64,173	4,306	2,815,758
1958								
Lightmeat	420,554	23,009	1,445,522	394,563	.....	55,852	68,228	2,407,728
Whitemeat	126,249	15	15,884	41,450	.....	165	252	184,015
Yellowtail & Bonito	....	....	3,565	4,373	.....	.....	....	7,938
TOTAL	546,803	23,024	1,464,971	440,386	.....	56,017	68,480	2,599,681

Chicken OF THE Sea® BRAND *

AMERICA'S MOST POPULAR BRAND IN THE SEA FOOD FIELD

Since 1914, Van Camp has packed and advertised only the finest sea food products. Little wonder then that today, their world-famous brands — Chicken of the Sea, White Star and Willapoint — are America's favorites — by far.

NEW FAMILY SIZE
Chicken OF THE Sea BRAND®
CHUNK LIGHT TU
Chicken OF THE Sea BRAND®
FANCY ALBACORE SOLID WHITE TUNA
cken OF THE Sea BRAND®
LIGHT TUNA
Chicken OF THE Sea BRAND®
ALBACORE
UNK WHITE TUNA
Chicken OF THE Sea BRAND®
CHUNK LIGHT TUNA
Willapoi
OYSTE
STEW
Chicken OF THE Sea BRAND®
Extra Delicious
OYSTER
STEW
Chicken OF THE Sea BRAND®
8 OZ NET WT
FROZEN
TUNA PIE

* *In the Pacific Northwest . . . it's WHITE STAR brand tuna*

VAN CAMP SEA FOOD COMPANY, INC. · PORT OF LONG BEACH · CALIFORNIA

1959-Imports of Canned Bonito to U.S.

(Pounds)

COUNTRIES	Oct. '58	Nov. '58	Dec. '58	Jan. '59	Feb.	March	April	May	June	July	August	Sept.	TOTAL
Peru	629,000	870,000	1,056,000	1,035,000	797,000	499,000	573,000	1,449,000	1,589,000	1,459,000	1,181,000	963,000	12,100,000
Other Countries	2,000	2,000	62,000	16,000	29,000	15,000	14,000	58,000	17,000	42,000	21,000	3,000	281,000
TOTAL	631,000	872,000	1,118,000	1,051,000	826,000	514,000	587,000	1,507,000	1,606,000	1,501,000	1,202,000	966,000	12,381,000

The sinking that attracted most press notice seemed to be that of the clipper *Sea Boy*, which went down off Baja California on Christmas Day. Not a man was hurt, but 50 tons of tuna went down with the ship.

- As the year 1959 drew to a close one of the world's biggest tuna canning firms and one of its largest fruit, vegetable, and salmon canners were reported considering a merger.

Van Camp Sea Food Co. of Long Beach, Calif., was the tuna canning firm involved. Van Camp has five plants in California, Samoa, Puerto Rico, and a subsidiary plant in Manta, Ecuador. The company reported sales of $56,600,000 for the fiscal year ending May 1, 1959.

California Packing Corporation, the other party to the reported merger discussions, operates 67 food plants, packing a big line of food products, throughout the United States and Canada.

Through its subsidiary Alaska Packers Association, the California Packing Corp. ranks among the world's largest canners of salmon. Through another subsidiary it is active in canning in the Philippine Islands.

SAN PEDRO CANNED TUNA BY GRADES

YEAR & TYPE	Solid	Standard	Chunks	Grated & Flakes	Dark & Light	Tonno	Misc.	TOTAL
1951								
Lightmeat	497,942	113,731	666,590	1,701,833	48,690	103,817	11,260	3,143,863
Whitemeat	264,789	72,667	99,723	141,941	610	418	229	580,377
Yellowtail & Bonito	---	22,926	---	66,153	----	---	---	89,079
TOTAL	762,731	209,324	766,313	1,909,927	49,300	104,235	11,489	3,813,319
1952								
Lightmeat	820,745	89,832	2,198,446	973,275	54,830	83,083	94,883	4,315,094
Whitemeat	505,833	12,114	302,238	178,827	6,276	1,738	24,375	1,031,401
Yellowtail & Bonito	---	53,475	7,606	132,457	----	---	---	193,538
TOTAL	1,326,578	155,421	2,508,290	1,284,559	61,106	84,821	119,258	5,540,033
1953								
Lightmeat	580,967	128,009	2,187,041	745,753	29,961	124,626	136,270	3,932,627
Whitemeat	699,469	18,379	326,908	217,422	10,546	164	40,211	1,313,099
Yellowtail & Bonito	---	10,915	16,865	75,941	----	---	---	103,721
TOTAL	1,280,436	157,303	2,530,814	1,039,116	40,507	124,790	176,481	5,349,447
1954								
Lightmeat	595,102	130,717	2,982,897	665,484	38,560	115,684	183,970	4,712,414
Whitemeat	691,162	8,648	272,537	203,845	7,687	327	22,458	1,206,664
Yellowtail & Bonito	---	8,456	812	17,858	----	---	---	27,126
TOTAL	1,286,264	147,821	3,256,246	887,187	46,247	116,011	206,428	5,946,204
1955								
Lightmeat	635,460	37,004	2,960,532	476,245	27,175	133,519	94,190	4,364,125
Whitemeat	872,403	31,411	233,586	232,775	5,084	---	36,618	1,411,877
Yellowtail & Bonito	---	272	---	2,229	----	---	---	2,501
TOTAL	1,507,863	68,687	3,194,118	711,249	32,259	133,519	130,808	5,778,503
1956								
Lightmeat	546,110	34,284	3,795,946	399,586	47,289	119,332	69,433	5,011,980
Whitemeat	607,003	26,656	287,068	117,444	4,257	25	15,340	1,057,793
Yellowtail & Bonito	---	---	---	3,978	----	---	---	3,978
TOTAL	1,153,113	60,940	4,083,014	521,008	51,546	119,357	84,773	6,073,751
1957								
Lightmeat	479,153	22,799	3,582,157	466,331	61,883	100,666	76,444	4,789,433
Whitemeat	793,641	36,731	536,927	186,358	9,959	1,878	22,688	1,588,182
Yellowtail & Bonito	---	39	---	3,885	----	---	---	3,924
TOTAL	1,272,794	59,569	4,119,084	656,574	71,842	102,544	99,132	6,381,539
1958								
Lightmeat	580,370	1,451	4,545,758	681,551	66,919	118,296	45,540	6,039,885
Whitemeat	670,560	1,108	239,721	131,429	2,434	---	11,322	1,056,574
Yellowtail & Bonito	---	2,000	56,802	41,823	----	---	836	101,461
TOTAL	1,250,930	4,559	4,842,281	854,803	69,353	118,296	57,698	7,197,920

SAN PEDRO CANNED TUNA

(Cases)

YEAR	Yellowfin	Bluefin	Skipjack	Albacore	Tonno	Tuna Flakes	Yellowtail	Bonito	TOTAL
1930	262,278	302,660	82,282	143,748	57,110	11,508	16,505	56,544	932,635
1931	182,115	46,462	166,091	144,796	35,514	12,850	1,292	35,997	625,117
1932	275,263	8,510	101,626	52,215	42,247	11,517	2,447	31,901	525,726
1933	258,982	7,580	74,728	49,391	41,200	10,907	1,389	17,892	462,069
1934	317,846	325,350	71,350	82,182	55,163	22,402	3,716	35,245	913,254
1935	306,202	413,630	88,746	107,501	81,660	33,909	17,123	91,080	1,139,851
1936	343,234	311,987	184,930	53,849	57,797	9,906	17,069	68,335	1,047,107
1937	416,611	188,432	276,165	83,123	136,612	34,534	3,352	85,518	1,224,347
1938	273,365	273,358	151,081	265,034	67,404	47,092	27,440	91,830	1,196,604
1939	578,727	191,456	212,042	281,666	70,022	41,104	11,739	139,502	1,526,258
1940	536,391	267,343	306,447	122,484	124,094	85,459	40,861	65,364	1,548,443
1941	308,886	136,333	109,563	73,024	33,530	40,545	26,241	135,594	863,716
1942	214,391	250,685	128,980	128,670	23,479	39,880	16,427	18,115	820,627
1943	303,881	162,844	88,203	187,052	17,239	120,548	67,780	28,815	976,362
1944	341,687	357,531	105,863	125,632	15,365	234,639	16,611	4,206	1,201,534
1945	460,982	275,116	89,279	148,286	16,198	452,292	3,262	31,366	1,476,781
1946	663,814	304,248	202,729	141,629	....	558,026	15,080	73,509	1,959,035
1947	765,426	342,309	209,281	104,726	7,403	417,644	87,934	220,606	2,155,329
1948	969,732	94,190	200,693	290,811	23,009	477,769	120,257	150,147	2,326,608
1949	614,847	38,142	157,373	289,063	78,821	1,330,358	31,072	18,123	2,557,799
1950	742,815	14,786	266,809	586,683	202,368	2,456,705	10,838	3,757	4,284,761
1951	*	*	1,289,523*	437,408	104,235	1,959,227	**	22,926**	3,813,319
1952	*	*	3,203,906*	844,821	84,821	1,345,665	**	61,081**	5,540,033
1953	*	*	2,922,287*	1,044,756	120,625	1,043,893	51,092	52,629	5,235,282
1954	*	*	725,729*	699,810	116,011	4,377,438	9,949	17,177	5,946,114
1955	*	*	672,464*	903,814	160,694	4,039,030#	224	2,277	5,778,503
1956	*	*	565,289*	613,312	122,074	4,717,583#	3,448	530	6,022,236
1957	*	*	501,952*	830,372	102,544	4,942,747#	1,811	2,113	6,381,539
1958	*	*	581,821*	671,668	118,296	5,724,674#	836	100,625	7,197,920

*Yellowfin, Bluefin and Skipjack not given separately. #Includes Chunks and miscellaneous. **Yellowtail and Bonito not given separately.

Its California fish canning operations in recent years have been confined largely to sardine, mackerel, and anchovies. Formerly the company engaged in tuna canning, but of recent years supplies of "Del Monte" tuna have all been custom canned to its exacting specifications by other operators.

Calpak reported sales of $346,200,000 for its fiscal year ending Feb. 28, 1959.

California Packing Corporation's headquarters are in San Francisco. The "Del Monte" label is one of the best known brands in the food industry and has always represented high quality foods.

South Pacific Canning Company

The Halfhill Company

T. A. Halfhill, President

HEmlock 7-1271

Canned Tuna - Bonito

Sardines - Mackerel - Clams

Institutional Size Tuna

Suppliers of Quality Seafood Products

Royal Pacific Brand TUNA

Halfhill's BEST BUY Brand TUNA

South Pacific Brand BONITO

HALFHILL BRAND TUNA

"OLDEST NAME IN TUNA"

Since 1903

General Offices:

1300 West Seventh Street
Long Beach 13, California

CALIFORNIA TUNA PACK BY MONTHS-1959

(Cases)

	Jan.	Feb.	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.	Total Cases "As they run"	Total Cases Basis 48-1/2s
ALBACORE Whitemeat:														
Solid Pack	47,541	88,289	94,139	96,455	41,189	28,793	162,343	190,941	87,206	124,413	94,561	70,585	1,126,455	
Standard Pack	---	---	---	---	---	---	---	---	94	---	---	---	94	
Chunk Pack	6,351	17,204	30,886	39,345	11,887	5,778	32,373	111,073	59,667	34,453	13,276	10,563	372,856	
Grated & Flakes	9,606	15,203	13,550	20,190	6,786	4,558	28,716	43,389	19,306	26,974	15,954	---	204,232	
Dark & Light	445	331	---	936	193	367	91	504	65	963	1,860	---	5,755	
Unspecified	---	6,897	---	14	---	---	250	2,945	---	8,052	5,984	---	24,142	
Total Whitemeat	63,943	127,924	138,575	156,940	60,055	39,496	223,773	348,852	166,338	194,855	131,635	81,148	1,733,534	1,643,212
LIGHTMEAT														
Solid Pack	87,528	97,653	99,380	109,980	79,645	98,048	81,392	73,289	41,181	77,475	47,747	62,553	955,871	
Standard Pack	5,397	6,389	---	---	329	427	1,430	1,186	---	---	196	---	15,354	
Chunk Pack	576,067	572,439	661,485	750,314	595,225	736,455	782,814	755,462	380,039	494,058	373,264	484,346	7,161,968	
Grated & Flakes	99,510	84,406	80,375	99,269	81,148	99,101	88,238	83,613	40,934	63,008	45,341	85,654	950,597	
Dark & Light	5,333	3,916	9,122	8,891	8,923	9,554	8,906	10,652	1,658	7,786	2,833	---	77,574	
Tonno	17,383	12,877	19,049	26,270	11,685	15,979	22,469	19,280	8,761	11,167	5,244	12,559	182,723	
Unspecified	21,119	27,303	25,092	25,595	10,135	---	3,772	2,032	2,465	1,647	145	---	119,305	
Total Lightmeat	812,337	804,983	894,503	1,020,319	787,090	959,564	989,021	945,514	475,038	655,141	474,770	645,112	9,463,392	9,107,755
Bonito & Yellowtail														
Solid Pack	---	---	---	---	---	---	---	62	---	---	---	---	62	
Chunk Pack	21	413	---	71	---	---	7,913	824	14,472	1,142	825	---	25,681	
Grated & Flakes	---	6,636	---	---	---	---	3,374	461	449	5,957	13,743	1,883	32,503	
Total Tuna-Like	21	7,049	---	71	---	---	11,287	1,347	14,921	7,099	14,568	1,883	58,246	43,774
GRAND TOTAL	876,301	939,956	1,033,078	1,177,330	847,145	999,060	1,224,081	1,295,713	656,297	857,095	620,973	728,143	11,255,172	10,794,741

California Pack of Canned Tuna and Related Fishes

— Cases —

YEAR	SAN PEDRO DISTRICT				SAN DIEGO DISTRICT				GRAND TOTAL	YEAR
	Light Tuna	White Tuna	Other Tuna*	TOTAL	Light Tuna	White Tuna	Other Tuna*	TOTAL		
1912	...	..	...	...	...	...	...	...	75,900**	1912
1913	...	...	...	...	...	...	...	...	77,500**	1913
1914	...	...	...	...	...	...	...	...	217,000**	1914
1915	...	...	...	...	...	...	...	...	237,365**	1915
1916	315,880	82,593	6,457	404,930	71,062	13,593	245	84,900	489,830	1916
1917	382,273	118,769	11,928	512,970	140,563	17,261	12,746	170,570	683,540	1917
1918	228,241	82,801	87,110	398,152	50,129	...	73,072	123,201	521,353	1918
1919	487,812	144,383	65,008	697,203	62,318	47,869	24,572	134,759	831,962	1919
1920	668,012	§	1,534	669,546	167,633	§	1,623	169,256	838,802	1920
1921	72,410	255,194	...	327,604	27,869	82,157	48	110,074	437,678	1921
1922	334,733	166,496	3,651	504,880	129,349	27,269	23	156,641	661,521	1922
1923	312,187	209,591	17,803	539,581	224,315	88,014	4,869	317,198	856,779	1923
1924	134,497	278,855	113,401	526,753	27,207	106,958	11,382	145,547	672,300	1924
1925	323,422	358,940	116,149	798,511	187,909	95,007	11,936	294,852	1,093,363	1925
1926	380,074	43,660	150,185	573,919	188,649	14,578	56,280	259,507	833,426	1926
1927	381,541	105,598	231,751	718,890	436,700	20,916	30,368	487,984	1,206,874	1927
1928	473,868	99,093	128,374	701,335	473,704	658	21,581	495,943	1,197,278	1928
1929	394,819	130,212	146,104	671,135	700,020	2,426	55,284	757,730	1,428,865	1929
1930	658,728	143,748	130,159	932,635	950,461	1,783	35,510	987,754	1,920,389	1930
1931	394,668	144,796	85,653	625,117	543,536	177	10,303	554,016	1,179,133	1931
1932	385,399	52,215	88,112	525,726	606,608	....	15,655	622,263	1,161,151	1932
1933	341,290	49,391	71,388	462,069	877,124	...	52,980	930,104	1,392,173	1933
1934	714,546	82,182	116,526	913,254	982,547	...	31,509	1,014,056	1,927,310	1934
1935	808,578	107,501	230,772	1,139,851	1,222,894	4,648	109,323	1,336,875	2,476,727	1935
1936	840,151	53,849	153,107	1,047,107	1,392,531	35	147,509	1,540,075	2,587,182	1936
1937	881,208	83,123	260,016	1,224,346	1,680,720	8,036	105,211	1,793,967	3,018,314	1937
1938	697,804	265,034	233,766	1,196,604	1,282,571	24,355	95,202	1,402,128	2,598,732	1938
1939	982,225	281,666	262,367	1,526,258	1,633,113	46,372	70,917	1,750,402	3,305,297	1939
1940	1,110,181	122,484	315,778	1,548,443	2,045,071	19,304	251,623	2,315,998	3,868,394	1940
1941	554,782	73,024	235,910	863,716	1,372,594	10,145	274,643	1,657,382	2,530,169	1941
1942	594,056	128,670	97,901	820,627	1,164,524	104,578	146,234	1,415,336	2,242,220	1942
1943	554,928	187,052	234,382	976,362	699,099	227,347	394,265	1,320,711	2,308,415	1943
1944	805,081	125,632	270,821	1,201,534	760,263	307,806	537,889	1,605,958	2,809,177	1944
1945	825,377	148,286	503,118	1,476,781	1,518,646	329,251	128,686	1,976,583	3,456,442	1945
1946	1,170,791	141,629	646,615	1,959,035	2,023,870	233,622	332,529	2,590,021	4,555,397	1946
1947	1,317,016	104,726	733,587	2,155,329	2,576,804	145,300	418,797	3,140,911	5,357,498	1947
1948	1,264,615	290,811	771,182	2,326,608	3,096,315	462,255	406,248	3,964,818	6,346,952	1948
1949	810,362	289,063	1,458,374	2,557,799	2,967,150	535,013	449,413	3,951,576	6,590,396	1949
1950	1,024,410	586,683	2,673,668	4,284,761	1,412,220	482,894	1,961,297	3,856,411	8,141,172	1950
1951	3,143,863	580,377	77,229	3,801,469	3,015,164	409,819	10,260	3,435,243	7,530,264	1951
1952	4,204,207	1,002,020	196,453	5,402,680	1,742,124	626,944	34,234	2,403,302	8,102,842¶	1952
1953	4,042,121	1,366,103	100,252	5,508,476	2,139,393	655,989	69,866	2,865,248	8,624,109¶	1953
1954	4,712,414	1,206,664	27,126	5,946,204	2,880,712	393,486	48,409	3,302,847	9,638,773¶	1954
1955	4,872,188	903,814	2,501	5,778,503	2,017,242	244,599	2,218	2,264,059	8,549,678¶	1955
1956	4,980,228	1,038,030	3,978	6,022,236	2,717,577	343,886	2,516	3,063,979	9,662,579¶	1956
1957	4,789,433	1,588,182	3,924	6,381,539	2,352,808	458,586	4,364	2,815,758	9,197,297	1957
1958	6,039,885	1,056,574	101,461	7,197,920	2,407,728	184,015	7,938	2,599,681	10,418,667	1958
1959	6,716,584	1,334,200	43,774	8,094,558	1,833,700	210,841	...	2,044,541	10,794,741	1959

¶ Quantities of tuna canned in Monterey, San Francisco and elsewhere in Northern California have been included in the grand total. Figures are for standard cases of 48 halves or equivalent. Figures for final year are temporary totals from official sources. Data for previous years have been corrected according to official statistics of the California Department of Fish and Game.

* "Other Tuna" through 1950 includes Bonito, Yellowtail, Flakes and Tonno. For 1951 and thereafter this column includes only Yellowtail and Bonito, Flakes and Tonno being included in other columns.

§ Included under other heads.

** No segregation available prior to 1916.

For the first 10 months of 1959 some 3,434 tons of Albacore were landed in northern and central California ports, as compared to 3,233 tons for the same period in 1958; and 3,421 tons in 1927.

Most of the landings of Albacore in northern and central California were trucked to southern California for canning.

- Atlantic tuna deliveries in the United States in 1959 fell materially short of expectations as the Japanese clippers in mid-year diverted their deliveries largely toward European countries. This switch is said to have followed heavy rejections of Atlantic

SAN DIEGO CANNED TUNA

(Cases -- All Sizes)

Year	Yellowfin	Bluefin	Skipjack	Albacore	Tonno	Tuna Flakes	Yellowtail	Bonito	TOTAL
1930	739,616	6,944	185,848	1,783	17,875	18,053	4,838	12,797	987,754
1931	431,229	.....	112,307	177	706	6,591	749	2,257	554,016
1932	403,050	177	203,381	.....	.....	4,774	668	10,213	622,263
1933	678,810	1	198,313	.....	.....	2,183	32,129	18,668	930,104
1934	780,066	6,683	195,798	.....	.....	8,100	6,100	17,309	1,014,056
1935	948,276	24,871	249,747	4,648	545	7,749	64,054	36,985	1,336,875
1936	1,074,811	22,390	295,330	35	740	14,967	95,059	36,743	1,540,075
1937	1,165,866	27,103	487,751	8,036	1,125	15,904	44,128	44,054	1,793,967
1938	1,010,814	49,840	221,917	24,355	.....	17,384	43,794	34,024	1,402,128
1939	1,348,565	27,020	257,528	46,372	7,318	31,136	12,875	19,588	1,750,402
1940	1,469,428	45,867	529,776	19,304	60,138	141,861	27,621	22,003	2,315,998
1941	1,016,759	32,369	323,466	10,145	308	130,004	103,066	41,265	1,657,382
1942	545,517	28,413	590,594	104,578	.....	111,096	20,965	14,173	1,415,336
1943	392,114	12,021	294,964	227,347	.....	381,967	5,488	6,810	1,320,711
1944	485,796	16,473	257,994	307,806	.....	530,368	3,237	4,284	1,605,958
1945	1,037,009	22,742	458,895	329,251	.....	96,162	14,074	18,450	1,976,583
1946	1,549,557	28,753	445,560	233,622	.....	268,767	28,965	34,797	2,590,021
1947	1,875,087	6,557	695,170	145,300	26,359	323,511	45,800	23,127	3,140,911
1948	2,364,819	1,991	729,505	462,255	.....	366,828	31,362	8,058	3,964,818
1949	2,059,468	2,889	904,793	535,013	4,038	420,491	22,695	2,189	3,951,576
1950	913,458	3,300	495,462	482,894	54,988	1,898,568	3,235	4,506	3,856,411
1951	*	2,424,215*	*	370,000	58,042	584,201	**	270**	3,437,428
1952	*	1,405,292*	*	534,574	44,576	485,423	**	3,115**	2,472,980
1953	*	1,674,428*	*	494,137	55,009	515,704***	52,042	17,824	2,809,144
1954	*	812,525*	*	249,972	64,155	2,147,546***	20,983	27,426	3,322,607
1955	*	498,611*	*	244,599	42,186	1,476,445#	1,756	462	2,264,059
1956	*	586,218*	*	234,984	60,745	2,179,516#	1,441	1,075	3,063,979
1957	*	519,059*	*	255,225	64,173	1,972,937#	3,102	1,262	2,815,758
1958	*	443,563*	*	126,264	56,017	1,965,899#	....	7,938	2,599,681

*Yellowfin, Bluefin and Skipjack not given separately. **Yellowtail and Bonito not given separately. ***Includes miscellaneous.
#Includes chunks and miscellaneous.

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NORTH PACIFIC ALBACORE TUNA LANDINGS

(POUNDS)

OREGON			YEAR	WASHINGTON					Combined Oregon and Washington TOTALS
Columbia River	South of Columbia	Oregon TOTAL		Puget Sound	Grays Harbor	Willapa Harbor	Columbia River	Washington TOTAL	
5,679,942	2,162,263	7,842,205	1948	637,822	5,050,164	251,165	511,382	6,450,533	14,292,738
4,553,180	1,773,760	6,326,940	1949	943,811	3,231,194	112,222	146,674	4,433,901	10,760,841
4,056,233	1,434,284	5,490,517	1950	503,953	3,099,890	209,104	473,328	4,286,275	9,776,792
1,982,583	933,962	2,916,545	1951	133,989	333,049	54,353	1,098	521,489	3,438,034
1,400,060	1,185,294	2,585,354	1952	72,310	86,973	17,780	---	177,063	2,762,417
226,650	546,862	773,512	1953	19,488	17,346	---	---	36,834	809,346
303,550	152,808	456,358	1954	129,737	21,588	---	---	151,325	607,683
444,458	58,852	503,304	1955	200,000	---	---	---	200,000	703,304
3,099,514	554,007	3,653,521	1956	209,388	239,270	2,457	178,609	629,728	4,283,249
1,785,991	915,516	2,701,507	1957	186,147	61,621	---	109,636	357,404	3,058,911
5,510,875	4,243,094	9,753,969	1958	340,240	833,219	2,323	327,638	1,503,420	11,257,389
			1959						
364,061	1,080,036	1,444,097	July	16,356	243,638	---	177,790	437,784	1,881,881
2,409,420	1,667,177	4,076,597	August	208,722	1,203,531	6,522	514,176	1,932,951	6,009,548
3,096,395	1,262,524	4,358,919	September	43,318	294,675	---	101,250	439,243	4,798,162
---	---	---	October	85,933	23,168	---	11,869	120,970	120,970
5,869,876	4,009,737	9,879,613	*1959 TOTALS	354,329	1,765,012	6,522	805,085	2,930,948	12,810,561

*Note: Complete 1959 figures not available.

tuna upon delivery in California.

Where the Japanese Atlantic vessels originally had programmed 120 trips for transshipment to the United States, the total expected for the April, 1959, through March, 1960, fiscal period was expected to be 50 trips, as follows:

Destination	*Trips*	*Short Tons*
California	24	8,288
Oregon	3	489
East Coast	16	3,624
Puerto Rico	5	1,251
Undetermined	2	1,100
	50	14,752

Following diversion of the trips from America, landings of Japanese-caught Atlantic tuna are reported as:

Delivery	*Trips*	*Metric Tons*
Italy	39	11,070
Yugoslavia	39	12,545
France	20	6,341
Europe	6	2,526
Africa	23	4,199
S. America	5	691
	132	37,372

● Northern California tuna canners reported a "good, normal" year in 1959. Business has shown a steady growth and has developed into an all-year tuna canning operation, with the product being sold in all the major markets of the United States.

At the end of the year private label chunk tuna was selling for $9.00 per case; solid pack light, $10.75; and solid pack white $12.50.

Some locally caught tuna was canned, but most of the pack consisted of imported frozen fish. From Jan. 1, 1959 to Oct. 31, 9,811 tons of frozen tuna were brought into San Francisco, as compared to 8,756 tons for the same period in 1958, and 6,715 tons for the same period in 1957.

The Albacore season out of northern California ports was one of the best on record. Prices to fishermen started at $435 per ton at the cannery or $388 at San Francisco Bay area buying stations, and ranged downward as the season went along to $325 per ton at the cannery, and $285 at the buying stations.

The 1958 pack of tuna in northern California was 621,066 cases, as compared to 528,147 cases in 1957, and 507,116 cases in 1956.

During 1959 only three canneries packed tuna in northern California: Tom Lazio Fish Co., Eureka; Washington Packing Corp., and F. E. Booth Co., Inc., San Francisco.

Pacific Northwest Tuna

● Oregon landings of Albacore in 1959—ex-fishing vessel only, and not counting imports—exceeded 10 million pounds and were the fifth highest on record, thus reflecting continuance of the rising tendency which has characterized this fishery in recent years.

Deliveries to the Columbia River, principally at Astoria, were 6 million pounds, with nearly 3 million at New-

Pacific Northwest Albacore

YEAR	Solid	Chunks	Flakes & Grated	TOTAL	VALUE
1939	...	...	.	173,359	
1940	...	...	...	207,723	
1941	...	...	...	197,629	
1942	...	...	...	314,353	
1943	260,085	41,329	...	301,414	
1944	604,574	242,022	...	846,596	
1945	324,900	141,959	....	466,859	
1946	136,127	56,110	...	192,237	
1947	272,888	112,682	....	385,570	
1948	293,547	123,809	...	417,356	
1949	326,911	106,008	...	432,919	
1950	502,778	198,236	...	701,014	$ ....
1951	292,973	96,263	...	389,236	....
1952	391,242	197,684	...	588,926	....
1953	412,819	181,254	...	594,073	....
1954	356,666	113,530	...	470,196	....
1955	438,945	39,583	105,412	583,940	7,837,294
1956	642,218	54,751	123,785	820,754	10,549,970
1957	561,291	67,510	140,042	768,843	10,187,730
1958	635,013	69,384	145,459	*849,856	11,702,466
1959	711,528	64,869	152,773	929,170	12,445,432

NOTE:- Small quantities canned at Eureka, Calif., have been included in the Pacific Northwest. Grade segregation not available for all styles of pack, and pack valuation not available for years prior to 1955. All figures are on the basis of standard cases of 48 halves. Valuation for current year is a preliminary total and subject to correction. * Albacore production of Hawaii included in 1958 and since.

Pacific Northwest Tuna Packs

(Oregon and Washington - in Standard Cases)

Year	Albacore				Lightmeat				Total	Year
	Solid	Chunks	Flakes	Total	Solid	Chunks	Flakes	Total		
1955	438,945	39,583	105,412	583,940	7,308	209,367	24,760	241,435	680,380	1955
1956	642,218	54,751	123,785	820,754	22,550	378,238	38,862	439,650	1,260,404	1956
1957	561,291	67,510	140,042	768,843	10,484	318,473	11,321	340,278	1,109,121	1957
1958	635,013	69,384	145,459	849,856	9,283	358,104	9,828	377,215	1,227,071	1958

port, on the Central Oregon coast, and about half as much at Coos Bay and other southern ports.

In addition to the Oregon deliveries, large quantities of Albacore caught off that state by California clippers were returned to California canneries for delivery.

First commercial landings of Albacore in Oregon were in about 1935, with the business not attaining any significance until the following year. There was a steady gain from 1938 until 1944 when the Pacific Northwest Albacore fishery peaked, Oregon deliveries exceeding 22 million pounds. From there the Oregon landings decreased for 10 years, reaching a low of less than 500,000 lbs. Since 1954 a rather consistent increase has been manifest.

U. S. Tuna Pack other than Pacific States

(Hawaii, Samoa, Puerto Rico, Atlantic and Gulf States)
In Standard Cases

YEAR	ALBACORE				LIGHTMEAT				TOTAL	YEAR
	Solid	Chunks	Flakes	Total	Solid	Chunks	Flakes	Total		
1955	**	**	**	**	276.829*	343.658*	222.225*	842.712*	842.712	1955
1956	273,262	28.682	19,527	321,471	142,885	348.032	144,035	634,952	956,423	1956
1957	438,035	70,433	44,109	552,577	38,190	693,262	***	731,452	1,284,029	1957
1958	464,537	**	68,163	532,700	110,204	1,013,236	212,468	1,335,908	1,868,608	1958

*Includes Albacore

**Included with Lightmeat

***Included with Chunks

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SARDINES

● Although central California sardine canners entered 1959 with utmost pessimism, largely due to the big carry-over from the 1958 pack, by the end of the year they were crying for more fish to pack!

One of the reasons for eagerness for fish was that another large pack in southern California failed to materialize, and as a matter of fact the catch in Monterey was almost as big as that of the San Pedro area.

In 1959 to early December 13,785 tons of fish had been landed at Monterey Bay and San Francisco canneries, as compared to 16,983 tons at Terminal Island. In 1959 some 22,623 tons had been processed in central California canneries, as compared to 70,562 tons in the San Pedro-Long Beach area.

As 1959 ended Monterey Bay and San Francisco canners who had started their boats out on 35-80 ton limits, had either removed these limits or raised them greatly.

● Fishermen felt the fish had moved north and were in Central California waters again in quantity. Fishermen and airplane spotters reported there were miles of sardines from Pt. Sur north into Monterey Bay, but in December they were lying in shallow water, where fishermen couldn't get at them without damaging their nets. During the month some fish were actually caught in Monterey Bay in broad daylight within 1,000-yds. of the canneries.

As has happened so often in the past, August 1, opening day of the central California season, was just another day as far as fishing activity was concerned. Monterey's fleet of some 20 odd purse seiners swung idly at their mooring, and there was no steam up in the canneries.

The reason for this was that no price had been arrived at for the price of fish from canner to boat owners. The best offer received by boat owners as of Aug. 17 was $27.50 per ton, and they weren't turning over their engines for that. In 1958 the price had started at $60 per ton, later dropping to $50 per ton.

The problem seemed to be that, according to informed sources in August, there were about 250,000 cases of California sardines unsold from the 1958 pack. Very little negotiation went on in Monterey, and no enthusiasm was shown.

Another problem was that boat owners were said to be asking an additional half-share for the boat, and crew members were balking at that.

● The real crux of the matter, the trade felt, was that California sardine packers have lost their export markets to South African and Japanese sardines. First of all, during the long, sardine-less years there was no fish to export, and now South African and Japanese canned sardines are selling below the cost of production of American fish.

The season, scheduled to open Aug. 1, finally got off to a halting start Sept. 8. Prior to that cannery workers and plant owners had reached an agreement. The base rate for men went up 3c per hour to $1.97; classified men, up 8c to $2.19; while women's rates stayed the same at $1.67.

Fishermen settled for fish landed at the cannery—$35 per ton, as compared to $60 and $50 per ton in 1958 when fishermen had to pay trucking charges from Morro Bay-Avila.

On the night of Sept. 8 Monterey's fleet went out and found schools of mixed fish right in Monterey Bay and nearby waters. Fish were in fair quantity but packers were loathe to operate at capacity, due to the reportedly big carry-over in southern California canneries, and the loss, for the most part of export markets to South African and Japanese fish. Most central California sardine canners seemed to feel

1959 - CALIFORNIA SARDINE PRODUCTION

Month	Tons Received	Cases 1-lb. Oval 4 doz.	Cases 1-lb. Tall 4 doz.	Cases 8-oz. Oblong 48	Cases 5-oz. All 100s	Cases Other Sizes	Total Cases Actual Count	Total Standard Cases 48 - 1 lb.	Month
September	3,520	31,190	15,066	16	7,805	604	54,681	53,456	September
October	17,048	221,726	120,537	638	56,494	82	399,477	390,428	October
November	9,127	120,234	59,300	1,186	26,852	25	207,597	202,981	November
December	5,139	53,307	27,843	263	13,021	101	94,535	90,063	December
1959 TOTAL	34,834	426,457	222,746	2,103	104,172	812	756,290	736,928	1959 TOTAL

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that they needed $25 per ton fish to make a profit.

Some 1,889 tons of sardines had been landed in Monterey to Sept. 18, as compared to 10,900 at the same time in 1958. The main encouragement in the situation, was, however, that the fish seemed to be back in central California waters.

- The last year that any worthwhile fishing was done in Monterey Bay or within short sailing distance of the canneries was in 1949—10 long years. During those 10 years 98-99% of all fish processed in Monterey had been trucked in from southern California ports.

During most of 1959 98-99% of the fish processed in Monterey Bay canneries was caught within easy sailing distance of the port, most of it within an hour and a half or two hour haul.

By Oct. 8 it was abundantly clear that sardines really *had* returned to central California waters. One school a half mile long by a third of a mile wide, and containing an estimated 10,000 tons was reported off Pt. Sur.

Furthermore, an ironic twist was given to the situation by the fact that four San Pedro purse seiners were fishing in central California waters, and their catch was being trucked to San Pedro!

Early in the month it appeared that the fish had started to move south, but as of the night of Oct. 7 they seemed to be back around Monterey again, and on that night some 500 tons were caught within a few miles of Monterey.

At the beginning of the season the fish ran small, probably three years old, and six or seven to the can. As the season ended the size of the fish seemed to increase, and they went five to a can—five or six years old. The fish were also mixed—50% mackerel-50% sardines, and for this mixture the fishermen got $40 per ton.

One observer predicted that the fish woud be even further north in 1960, to around Santa Cruz and Davenport.

High boat appeared to be Nino Davi's *New Roma.*

- As the 1959 season drew to a close it was estimated that about 275,700 cases of sardines had been packed in Monterey Bay-San Francisco as compared to 564,234 cases for the entire year of 1958.

With the approach of the 1959 season, which as mentioned above didn't start until September, the price of California sardines was depressed due to the large carry-over. A market was not established by the lower price of raw fish to the fishermen but by the

California Sardine Industry

	Catch, Tons	Oil, Gallons	Meal, Tons	Case Pack, 1-lb. Ovals or Equiv.
1944-45 SEASON				
San Francisco District	136,337	5,616,063	22,258	271,528
Monterey District	234,613	8,305,401	34,920	887,190
San Pedro - San Diego District	177,465	3,781,148	26,795	1,102,662
Season TOTALS	548,415	17,702,612	89,973	2,261,380
1945-46 SEASON				
San Francisco District	83,483	3,581,808	12,765	456,001
Monterey District	142,282	4,803,560	20,297	1,220,579
San Pedro - San Diego District	170,325	2,846,216	23,481	2,073,963
Season TOTALS	396,090	11,231,584	56,543	3,750,543
1946-47 SEASON				
San Francisco District	2,846	65,002	519	6,590
Monterey District	26,818	755,674	3,893	155,329
San Pedro - San Diego District	198,052	3,314,193	26,870	1,931,544
Season TOTALS	227,716	4,134,869	31,182	2,093,463
1947-48 SEASON				
San Francisco District	383	4,440	37	5,793
Monterey District	14,492	260,375	1,756	222,867
San Pedro - San Diego District	95,362	1,458,983	11,762	1,258,660
Season TOTALS	110,237	1,723,798	13,555	1,487,320
1948-49 SEASON				
San Francisco District	1,688	16,590	127	34,197
Monterey District	52,203	783,627	5,566	914,624
San Pedro - San Diego District	127,350	1,436,939	13,301	2,113,897
Season TOTALS	181,241	2,237,156	18,994	3,062,718
1949-50 SEASON				
San Francisco District	17,798	607,004	2,917	81,040
Monterey District	133,570	3,431,286	17,513	1,606,767
San Pedro - San Diego District	186,392	2,402,760	23,343	2,632,305
Season TOTALS	337,760	6,441,050	43,773	4,320,112
1950-51 SEASON				
San Francisco District	---	538,132	2,408	67,698
Monterey District	---	1,132,643	6,443	759,172
San Pedro - San Diego District	---	4,802,054	34,660	4,444,120
Season TOTALS	---	6,472,829	43,511	5,270,990
1951-52 SEASON				
San Francisco District	321	6,350	32	4,342
Monterey District	24,864	327,149	2,217	495,542
San Pedro - San Diego District	101,356	1,121,770	10,855	1,867,978
Season TOTALS	126,541	1,455,269	13,104	2,367,862
1952-53 SEASON				
San Francisco District	---	----	--	---
Monterey District	285	2,345	14	5,740
San Pedro - San Diego District	3,330	15,529	186	64,819
Season TOTALS	3,615	17,874	200	70,559
1953-54 SEASON				
San Francisco District	---	----	--	---
Monterey District	58	410	3	1,335
San Pedro - San Diego District	2,568	12,218	161	61,622
Season TOTALS	2,620	12,628	164	62,957
1954-55 SEASON				
San Francisco District	814	4,550	45	18,883
Monterey District	8,674	86,032	567	192,525
San Pedro - San Diego District	57,654	669,922	5,926	1,180,517
Season TOTALS	67,142	760,504	6,538	1,391,925
1955-56 SEASON				
San Francisco District	2,522	21,114	185	55,686
Monterey District	14,133	168,796	1,143	313,255
San Pedro - San Diego District	56,535	690,106	5,763	1,162,605
Season TOTALS	73,190	880,016	7,091	1,531,546
1956-57 SEASON				
San Francisco District	836	----	--	18,236
Monterey District	5,787	49,410	330	124,393
San Diego District	25,114	276,703	2,585	590,052
Season TOTALS	31,737	326,113	2,915	732,681
1957 SEASON*				
San Francisco District	877	2,115	24	22,030
Monterey District	8,281	33,813	383	185,593
San Diego District	11,332	44,087	935	271,660
Season TOTALS	20,490	80,015	1,342	479,283
1958 SEASON				
San Francisco District	2,799	29,793	241	32,833
Monterey District	21,181	230,905	1,773	253,859
San Pedro - San Diego District	77,587	554,830	7,481	639,898
Season TOTALS	101,567	815,528	9,495	926,590

*For 1957 and following years seasonal records are included in one calendar year, instead of in portions of two years as formerly recorded. The sardine season now closes statewide on the last day of December.

ARENCO

FOR SARDINE,
SMELT,
AND HERRING

Model
CIF

ARENCO
fish cleaning and filleting machine

OPERATION: A. The fish is fed manually into the conveyor, head and belly properly oriented, and the head and, if desired, also the tail is cut off. The fish is then passed on automatically to
B, where it is split open or belly-cut and cleaned thoroughly and completely. It can be delivered by the machine in this condition as an end product, or it can be filleted in this part of the machine. The two fillets of the fish can either be left together or separated. After it is cut open and cleaned (not filleted) the fish can be passed on to
C, where it is subdivided into chunks of the desired size, measured from either end of the fish. Part C is optional.

FISH SIZES: The CIF is intended for fish within the following three size groups

group 1 1 — 3 fish per lb.
group 2 3 — 8 fish per lb.
group 3 8 — 15 fish per lb.

Change over from one group to another can be done very easily and quickly. The machine adjusts itself automatically to variations in size within each group.

SPEED: 140 fish per minute, corresponding to 16 800 single fillets per hour.

For more information on this versatile machine, write:

ARENCO MACHINE COMPANY, INC.
25 West 43rd Street New York 36, New York

Sole representatives in USA, Canada and Central America

CALIFORNIA CANNED FISH PACKS

YEAR	Albacore Cases	Tuna-Bluefin Cases	Tuna-Skipjack Cases	Tuna-Yellowfin Cases	Tuna-Chunks, Flakes	Tuna-Tonno Cases	Bonito Cases	Yellowtail Cases	Mackerel Cases	Salmon Cases	Sardine Cases	Shad Cases	Squid Cases	Pet Food Cases	Misc. Cases	TOTAL CASES	YEAR
1926	66,001	70,283	274,970	165,561	8,162	131,553	44,186	18,940	550	11,761	2,163,755	.....	23,536	.....	63,794	3,043,052	1926
1927	126,699	50,008	382,175	366,395	7,631	207,496	22,277	24,530	10,961	8,435	2,625,412	6,485	.....	.....	44,396	3,882,900	1927
1928	99,751	132,342	194,491	503,077	16,733	117,821	18,900	5,657	388,471	4,585	2,815,330	7,475	2,056	.....	124,809	4,431,498	1928
1929	132,638	89,728	347,132	612,810	18,613	119,805	47,674	15,296	611,503	5,503	3,941,459	9,791	6,056	.....	53,925	6,012,433	1929
1930	145,531	309,604	268,130	878,382	29,561	74,985	69,341	21,343	127,333	11,202	3,069,524	1,796	25,271	.....	127,236	5,159,239	1930
1931	144,973	46,462	278,398	613,344	19,441	36,220	38,254	2,041	101,217	14,070	1,794,991	.....	19,827	44,372	4,855	3,158,465	1931
1932	65,377	8,687	305,007	678,313	16,291	42,247	42,114	3,115	89,176	2,005	1,001,845	201	.....	67,256	50	2,323,052	1932
1933	49,391	7,581	273,041	937,792	13,090	41,200	36,560	33,518	760,126	3,076	1,422,860	.....	1,740	112,725	1,369	3,698,293	1933
1934	82,182	332,411	267,328	1,097,912	30,502	55,163	52,554	9,816	1,214,491	820	2,051,726	.....	4,257	80,224	1,104	5,324,084	1934
1935	112,149	438,501	338,493	1,254,478	41,658	82,205	128,065	81,177	1,761,186	874	2,529,262	5,039	8,781	122,826	2,269	6,920,625	1935
1936	53,884	334,377	480,260	1,418,045	24,873	58,537	104,078	112,128	1,228,348	.....	2,820,742	13,124	12,282	128,384	5,178	6,803,815	1936
1937	91,159	215,535	763,916	1,582,477	50,438	137,737	129,572	47,480	793,780	147	2,983,204	6,361	5,531	179,230	100	6,986,616	1937
1938	289,389	324,198	372,998	1,284,179	64,476	67,404	125,854	71,234	958,890	.....	2,443,469	11,244	20,167	287,403	545	6,341,557	1938
1939	356,675	218,476	469,570	1,927,292	72,240	77,340	159,090	24,614	968,718	.....	3,326,162	12,665	23,926	384,427	150	8,021,345	1939
1940	145,741	313,210	836,223	2,005,819	227,320	184,232	87,367	68,482	1,435,113	.....	3,188,089	15,743	34,603	832,091	100	9,374,133	1940
1941	92,240	168,702	433,029	1,325,645	170,549	33,838	176,859	129,307	843,747	1,125	5,395,284	68	21,587	1,027,903	16	9,820,485	1941
1942	239,505	279,098	719,574	759,908	150,976	23,479	32,288	37,392	614,090	.....	3,846,785	24,945	941	197,403	.....	6,941,643	1942
1943	425,741	174,865	383,167	696,209	502,515	26,599	35,625	73,268	839,312	1,475	3,400,106	11,516	119,237	.....	11,131	6,699,736	1943
1944	435,123	374,004	363,857	827,483	757,800	15,365	8,490	19,848	986,422	1,691	3,725,657	12,541	141,808	.....	45,206	7,738,949	1944
1945	480,615	297,858	548,174	1,497,991	548,454	16,198	49,816	17,336	589,617	5,457	3,884,582	.....	184,141	.....	225,971	8,346,210	1945
1946	381,271	333,001	648,289	2,213,692	826,793	.....	108,306	44,045	716,668	9,817	3,102,232	589	643,843	.....	56,689	9,085,235	1946
1947	286,272	370,893	904,451	2,642,354	742,038	33,762	243,994	133,734	1,522,199	18,754	1,814,050	1,778	229,967	1,087,040	199,115	10,230,401	1947
1948	797,035	98,473	930,235	3,335,759	850,760	22,663	158,253	153,428	971,646	22,786	3,203,028	2,477	369,762	1,153,802	204,741	12,274,848	1948
1949	861,737	46,336	1,068,215	2,694,947	1,762,223	82,859	20,512	53,767	924,104	1,801	4,286,034	893	88,217	1,249,366	20,265	13,161,076	1949
1950	1,125,463	11,186	734,528	1,632,625	4,497,839	257,356	8,263	14,073	1,410,541	4,279	5,430,439	1,948	84,675	2,060,709	85,827	17,359,751	1950
1951	607,230	.....	.....	1,586,142	4,793,574	162,277	14,356	87,489	1,040,300	1,266	3,052,642	1,078	224,884	1,593,176	431,465	13,595,879	1951
1952	962,063	.....	.....	1,547,310	5,443,228	129,502	46,509	181,261	1,573,745	3,115	109,633	1,375	1,616	1,751,006	724,522	12,474,885	1952
1953	1,215,362	.....	.....	1,352,438	5,710,186	176,002	69,638	100,480	598,305	4,931	64,084	4,911	166,612	1,692,795	1,202,769	12,358,514	1953
1954	1,092,313	.....	.....	1,592,457	6,698,302	180,166	44,603	30,932	383,500	2,162	1,437,228	1,997	134,718	1,892,187	469,814	13,960,379	1954
1955	1,285,249	.....	.....	1,251,199	5,805,631	202,880	2,739	1,980	564,672	2,954	1,537,793	.....	284,890	2,378,366	478,934	13,797,287	1955
1956	1,029,810	.....	.....	1,288,516	7,240,023	177,492	1,605	4,889	1,131,462	3,189	799,650	3,976	387,297	3,099,589	668,208	15,835,706	1956
1957	1,227,593	.....	.....	1,067,147	7,255,699	166,717	3,375	4,913	1,360,688	2,174	523,228	859	261,097	3,399,763	528,965	15,802,218	1957
1958	955,344	.....	.....	1,086,057	8,093,554	174,313	108,563	836	404,320	1,005	2,338,857	.....	107,693	3,562,199	67,795	16,900,536	1958

Bluefin, Skipjack and Yellowfin are combined under Yellowfin from 1951. Cases are as they run.

laws of supply and demand. In round figures at the start of the 1959 season ovals were selling for $6.75, and perhaps some shading on that. Talls, natural, were going for $4.75, talls, tomato sauce, $5.25, and 100 5-oz. tomato sauce, $5.75.

It soon became evident that fishing was going to be as heavy as in 1958, and canners got stronger ideas. All of the above mentioned prices went up, within a relatively short time, 25c per case.

As December was ending ovals were selling for $7.50; talls, natural, $5.25; talls, tomato sauce, $5.75, and 100 5-oz., $6.50.

The Philippines, in spite of South African and Japanese competition, was still the biggest export market, and observers stated that they though the Republic was still taking a large percentage of California's production in spite of money restrictions.

One market that opened up during the year was the Fiji Islands, which took a good quantity of California fish.

California sardines still couldn't compete in the British Isles, despite the easing of import duties on account of the preferential tariff given South African fish.

One of the most encouraging factors was that the domestic market for California sardines was being redeveloped, and brokers throughout the country are taking moe interest in the item on account of increased volume.

● An important step was taken by California Cooperative Oceanic Fisheries Investigations when that group appointed Garth I. Murphy, an experience biologist and administrator, as coordinator of the research program.

CCOFI spends nearly a million dollars a year through five research agencies, the U.S. Fish & Wildlife Service, the California Department of Fish & Game, the Scripps Institution of Oceanography, California Academy of Sciences, and Stanford University, seeking the answers to many questions concerning sardines, mackerel and other fishes.

Mr. Murphy, before his appointment, was director of the U.S. Fish & Wildlife Service's Pacific Oceanographic Fisheries Investigations with headquarters in Honolulu.

Dr. Robert C. Miller, director of the California Academy of Sciences in San Francisco said at the time of the appointment:

"The matter of hiring a coordinator has been talked about ever since the CCOFI program started 10 years ago. The reason we didn't hire a coordinator at that time was that when we had the man lined up we didn't have the money. We have never had much money for salaries, and we realized that the man for the job must be high powered and thus expensive.

"So as a stop-gap in those early days we formed a committee consisting of the heads of the cooperating agencies. In the planning stages of the program this worked fine but later on the heads of the cooperating agencies were not the ones closest to the research work being undertaken. Two years ago we formed a different kind of committee—men closer to the actual investigations.

"All through the years the Marine Research Committee, appointed by the governor, has been coordinating the investigations, and Julian Burnette, chairman of the committee, has given an immense amount of this own time to the work.

"Last year it was decided to appoint a top fisheries scientist who would work with all five cooperating agencies and with the Marine Research Committee, and who would be re-

CALIFORNIA MARINE
CURING & PACKING CO.

Packers of Quality Canned Fish

TUNA

Carnation Brand

Carnation Brand Fancy Albacore
Carnation Brand Fancy Light Tuna
Carnation Brand Chunk Light Tuna
Carnation Brand Creamed Tuna

Priority Brand

Priority Brand Fancy Albacore
Priority Brand Fancy Light Tuna
Priority Brand Chunk Light Tuna
Priority Brand Grated Light Tuna

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PLANT LOCATION:
338 Cannery Street, Terminal Island, California

CALIFORNIA CANNED SARDINE PACK

(Cases)

YEAR	MONTEREY AND SAN FRANCISCO BAY DISTRICT							SAN PEDRO DISTRICT						SAN DIEGO DISTRICT TOTAL	GRAND TOTAL	YEAR
	1-lb. Ovals	1-lb. Talls	½-lb. Cans Misc.	½-lb. Fillets	5-oz. Talls	Other Sizes	TOTAL	1-lb. Ovals	1-lb. Talls	½-lb. Cans Misc.	5-oz. Talls	Other Sizes	TOTAL			
1912	17,702	....	....	....	....	1,072	18,774	....	....	....	....	....	....	....	18,774	1912
1913	73,686	....	....	....	....	....	73,686	....	....	....	....	....	....	....	73,686	1913
1914	80,834	....	....	....	....	....	80,834	....	....	....	....	....	....	....	80,834	1914
1915	46,625	....	....	....	....	609	47,234	....	....	....	....	....	....	....	47,234	1915
1916	97,100	....	....	....	....	8,532	105,632	2,512	....	....	....	3,296	5,808	54,655	166,095	1916
1917	331,065	....	....	....	....	29,809	363,472	131,347	....	....	....	546,033	679,120	147,602	1,190,194	1917
1918	593,448	....	....	....	....	26,151	619,609	325,587	....	....	....	433,374	758,961	106,418	1,484,979	1918
1919	805,884	....	....	....	....	27,084	832,968	125,784	....	....	....	105,741	231,514	87,033	1,151,515	1919
1920	....	....	....	....	....	....	706,726	....	....	....	....	....	244,900	111,370	1,062,996	1920
1921	287,954	....	....	....	....	10,975	298,929	77,048	....	....	....	3,765	80,813	9,370	389,112	1921
1922	353,188	....	....	....	....	1,479	354,667	340,938	....	....	....	6,096	347,034	27,140	729,034	1922
1923	580,984	....	....	....	....	10,001	590,985	490,064	....	....	....	2,769	492,833	48,205	1,132,023	1923
1924	631,774	....	....	....	....	22,416	654,190	693,133	....	....	....	4,491	697,624	63,624	1,420,128	1924
1925	737,743	....	....	....	....	37,119	774,862	920,191	....	....	....	2,685	922,876	56,041	1,753,779	1925
1926	1,158,133	....	31,483	....	....	2,867	1,192,483	861,088	....	....	....	21,702	861,481	88,419	2,163,755	1926
1927	1,341,872	....	36,363	237	17,808	826	1,397,106	1,046,453	....	....	119,815	....	1,166,268	62,038	2,625,412	1927
1928	1,511,535	4,569	43,754	159	80,252	2,495	1,642,764	945,676	9,652	....	146,724	....	1,099,052	73,514	2,815,330	1928
1929	2,039,526	54,618	16,969	11	75,101	2,187	2,188,412	1,438,159	76,271	8,072	168,039	33,753	1,724,294	28,753	3,941,459	1929
1930	1,579,408	74,043	19,692	391	141,524	3,751	1,818,809	863,254	106,460	2,909	228,965	8,138	1,209,726	40,989	3,069,524	1930
1931	1,004,215	43,722	11,280	....	40,375	337	1,099,929	498,996	59,853	11,931	119,930	1,467	691,637	3,425	1,794,991	1931
1932	459,756	4,467	3,276	88	17,726	2,528	487,481	415,874	36,292	....	54,197	....	506,363	7,641	1,001,845	1932
1933	838,533	47,575	4,604	....	38,013	1,532	930,217	365,750	57,969	....	53,996	4,336	482,051	10,592	1,422,860	1933
1934	1,091,158	48,769	6,527	8,361	67,913	2,675	1,225,413	531,619	119,506	....	164,735	....	815,860	10,463	2,051,736	1934
1935	1,126,466	218,523	39,566	91,525	128,168	27,704	1,631,952	515,808	135,531	25,519	112,264	251	889,373	11,437	2,532,762	1935
1936	1,089,683	202,148	89,280	113,516	124,490	41,946	1,661,063	586,038	259,793	132,488	156,649	749	1,135,717	22,863	2,819,643	1936
1937	679,317	227,806	51,068	73,785	68,164	9,284	1,109,424	761,776	634,215	263,729	200,060	1,509	1,861,289	12,491	2,983,204	1937
1938	721,036	58,108	104,419	97,277	154,488	16,287	1,151,675	600,532	318,691	212,064	162,245	....	1,293,532	19,056	2,464,263	1938
1939	1,248,747	310,163	125,251	141,900	138,217	28,538	1,992,821	627,524	308,896	217,100	178,072	1,520	1,333,112	229	3,326,162	1939
1940	933,955	249,195	158,300	151,518	225,975	18,384	1,737,327	664,241	398,960	230,771	156,681	72	1,450,725	37	3,188,089	1940
1941	1,601,506	1,092,720	234,093	182,703	296,568	54,961	3,462,551	689,210	870,256	216,972	151,384	2,136	1,929,958	2,775	5,395,284	1941
1942	802,795	663,309	8,283	75,386	94,755	59,695	1,704,223	619,881	1,342,030	85,776	90,672	2,918	2,141,277	1,285	3,846,785	1942
1943	1,045,451	832,934	128,438	....	20,208	36,037	2,063,068	400,504	846,314	44,516	26,507	2,235	1,320,076	697	3,383,841	1943
1944	1,051,397	1,088,918	61,828	20,584	374	18,255	2,241,356	434,414	963,551	23,297	....	1,040	1,422,302	....	3,663,658	1944
1945	766,554	951,346	81,019	10,075	....	102,391	1,911,385	444,649	1,480,175	48,215	....	....	1,973,039	....	3,884,424	1945
1946	123,063	171,638	39,376	10,233	....	9,050	353,420	602,008	2,073,679	73,125	....	....	2,748,812	....	3,102,232	1946
1947	108,289	71,691	72,995	155,677	....	4,181	412,833	510,760	802,243	29,327	57,260	....	1,399,590	1,627	1,814,050	1947
1948	400,841	197,865	527,346	16,645	....	994	1,143,691	611,927	970,569	347,991	120,413	....	2,050,900	6,587	3,201,178	1948
1949	869,104	491,196	344,148	12,434	127,741	6,291	1,850,914	822,053	1,112,939	194,690	305,438	....	2,435,120	....	4,286,034	1949
1950	427,416	224,569	6,533	44,843	99,657	24,179	827,197	1,476,695	2,256,213	355,087	451,365	63,882	4,603,242	....	5,430,439	1950
1951	377,754	75,721	2,785	12,285	95,257	7,120	570,922	1,030,080	971,971	74,273	368,611	36,785	2,481,720	....	3,052,642	1951
1952	5,730	10	....	....	....	....	5,740	60,116	34,694	1,513	1,317	2,450	100,090	....	105,830	1952
1953	1,335	....	....	....	....	....	1,335	41,340	18,902	1,773	679	55	62,794	....	64,084	1953
1954	123,215	12,256	65	155	30,516	....	216,207	571,945	488,981	39,426	91,377	29,292	1,221,021	....	1,437,228	1954
1955	292,234	61,128	....	4	3,887	11,340	368,593	578,551	334,740	89,323	164,880	1,706	1,169,200	....	1,537,793	1955
1956	97,760	32,945	....	....	6,712	1,260	138,677	326,852	211,849	22,313	82,059	17,900	660,973	....	799,650	1956
1957	187,819	21,927	2,032	....	....	3,362	215,140	208,949	32,995	9,247	56,897	....	308,088	....	523,228	1957
1958	345,159	134,868	28,930	....	74,885	384	584,226	546,446	819,199	104,495	232,227	52,264	1,754,631	....	2,338,857	1958
1959	187,641	98,008	....	....	....	38,599	324,248	238,816	124,738	....	....	49,126	412,680	....	736,928	1959

NOTE: - Figures for 1959 are preliminary totals from official sources. Those for previous years have been corrected from statistics of the California Division of Fish and Game.

Full segregation of the various sizes is not available for years prior to 1926 and is estimated for 1959.

*Where sizes are not segregated, they are combined with 1-lb. Talls. Figures of years prior to 1950 are given in cases "as they run", without reduction to standard cases. The great majority of the production, however, consists of 48-lb. cases. Figures for "Other Sizes" in 1950 and after have been reduced to standard cases, equivalent to cases of 48 - 1-lb. ovals.

Pacific Canned Pet Food

(In standard cases equivalent to 48 lbs. each)

YEAR	Alaska		California		Washington and Oregon		Pacific Totals	
	Cases	Value	Cases	Value	Cases	Value	Cases	Value
1949	75	$450	896,489	$4,222,300	*	*	896,564	$4,222,750
1950	--	---	1,388,110	7,471,751	*	*	1,388,110	7,471,751
1951	35	263	1,192,428	6,340,527	**	**	1,192,463	6,340,790
1952	80	600	1,328,513	6,753,039	**	**	1,328,593	6,753,639
1953	50	375	1,091,815	5,778,955	34,400	$133,300	1,126,265	5,912,630
1954	--	---	976,477	5,098,992	49,148	188,736	1,025,625	5,287,728
1955	--	---	1,949,375	10,062,298	61,846	242,628	2,011,221	10,304,926
1956	--	---	2,548,328	12,084,221	78,398	316,127	2,626,726	12,400,348
1957	--	---	2,632,149	11,778,910	88,409	389,792	2,720,558	12,168,702
1958	--	---	2,327,734***	15,143,559	98,920	539,107	2,426,654	15,682,666

* Not available. ** Combined with California. *** Contains small amount packed in American Samoa.

Murray 1-5125

Hillcrest 6-2135

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Tokyo, Japan

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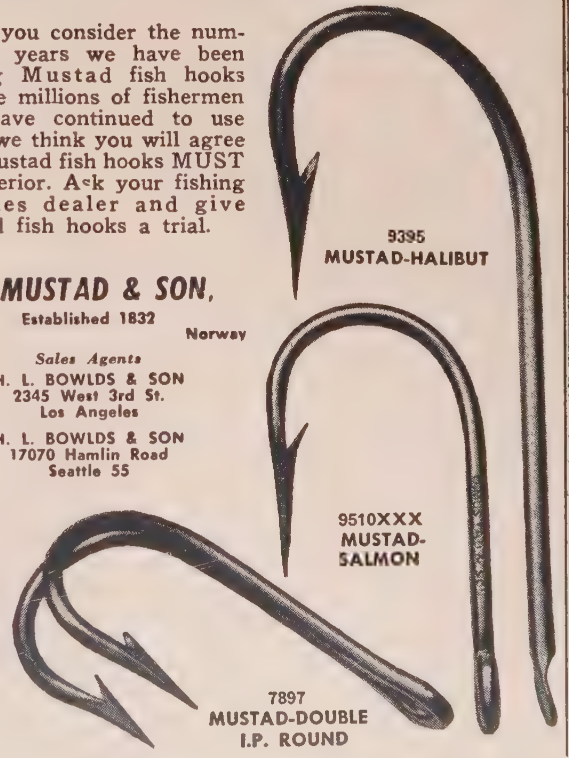

1959 California Mackerel Pack

PACIFIC MACKEREL				MONTH	JACK MACKEREL				All Mackerel Cases
Tons Delivered	Cases 1-lb. Cans	Cases Other Sizes	Total Cases		Tons Delivered	Cases 1-lb. Cans	Cases Other Sizes	Total Cases	
403	4,017	---	4,017	January	51	110	---	110	4,127
26	215	---	215	February	194	---	---	---	215
721	8,126	---	8,126	March	1,538	10,447	6,027	16,474	24,600
1,192	20,880	---	20,880	April	1,223	18,426	---	18,426	39,306
318	5,978	---	5,978	May	1,417	6,457	---	6,457	12,435
408	7,656	---	7,656	June	3,238	38,174	---	38,174	45,830
2,066	32,039	---	32,039	July	194	2,601	---	2,601	34,640
1,262	17,941	---	17,941	August	50	---	---	---	17,941
2,349	37,490	---	37,490	September	986	23,778	---	23,778	61,268
4,794	92,287	---	92,287	October	3,495	70,810	---	70,810	163,097
2,622	53,951	---	53,951	November	4,321	97,752	---	97,752	151,703
773	8,265	---	8,265	December	977	23,240	---	23,240	31,505
16,934	288,845	---	288,845	TOTALS	17,684	291,795	6,027	297,822	586,667

sponsible to the committee, which is, as mentioned above, responsible for coordinating the whole program.

"Mr. Murphy's duties will be to coordinate the work of the CCOFI agencies, to advise the Marine Research Committee, and to represent the Marine Research Committee on the CCOFI in matters of policy, interest, and allocation of funds.

"In a nutshell, the purpose of Mr. Murphy's appointment is to achieve a more complete coordination of the activities of the five agencies and a better liaison between the Marine Research Committee and the agencies.

"The Marine Research Committee meets but a few times each year, and a man was needed to take care of matters between meetings.

"In order to obtain Mr. Murphy's services a contract had to be made with one of the cooperating agencies and the California Academy of Sciences was selected to employ Mr. Murphy.

"During the early days of the investigations there were almost no sardines to investigate. Now that sardines have again been spawning as far north as Monterey, the CCOFI has something to work on. We have learned a great deal about sardine biology but the return of sardines to California waters enables the CCOFI to make a comparison of conditions in the ocean between the years when they were not there, and now when they are back, bearing in mind of course that the maximum California catch was approximately 727,000 tons in 1936-37, as compared to about 31,411 tons in 1959.

"We now know what conditions in the ocean are when sardines are scarce, and if the seasonal catch continues to increase we shall be able to make comparison of oceanographic conditions in times of scarcity and abundance.

"I look forward to very productive investigations in the years ahead."

MACKEREL

- Some 114 tons of anchovies were landed at central California canneries during the first 10 months of 1959.

However, very few of these fish were canned in Monterey or San Francisco, 228 cases to be exact, compared to 7,648 cases in 1958, and 24,437 cases in 1957.

It is obvious from the above figures that fishing was poor in central California waters during the first 10 months of 1959.

The jack mackerel picture was none too bright either. About 2768 tons were landed during the first 10 months of 1959, as compared to 1,496 tons for the same period in 1958. From December through October 1959, 70,419 cases of jack mackerel were packed in central California, as compared to 76,277 cases packed in the same period in 1958.

Pacific mackerel catches amounted to 527 tons for the first 10 months of 1959, as compared to 11 tons in 1958. The pack of Pacific mackerel was 11,358 cases through Oct., 1959.

Some of this fish was trucked in to Monterey and San Francisco from southern California ports.

The canned mackerel market was strong in San Francisco throughout the entire year, according to market observers. This of course was due to the fish's scarcity. Jack mackerel was steady throughout the entire year, varying from $7.00-$7.50 per case, with the whole pack going domestic.

Pacific mackerel, sold throughout the year for $7.25-$7.75.

Canners packing anchovy and mackerel during the year were: J-D Packing Co., San Francisco; Santa Cruz Canning Co., Moss Landing; and Enterprise Packers, San Xavier Fish Packing Co., California Packing Corp., Carmel Canning Co., and Hovden Food Products Corp., Monterey.

California Mackerel Production by Species

Year	PACIFIC MACKEREL			Total Cases All Mackerel	JACK MACKEREL			Year
	Central California	Southern California	Total Pacific Mackerel		Total Jack Mackerel	Southern California	Central California	
1948	7,269	381,732	389,001	971,646	582,645	429,923	152,722	1948
1949	994	506,424	507,418	924,104	416,686	362,977	53,709	1949
1950	4,155	371,055	375,210	1,410,541	1,035,331	707,858*	327,473	1950
1951	5,448	365,956	371,404	1,040,300	668,896	650,274	18,622	1951
1952	2,509	216,011	218,520	1,573,745	1,355,225	1,335,416	19,809	1952
1953	....	71,222	71,222	598,305	527,083	516,839	10,244	1953
1954	14,495	213,452	227,947	383,500	155,553	80,057	75,496	1954
1955	12,012	194,520	206,532	564,672	358,140	272,658	85,482	1955
1956	102,687	370,071	472,758	1,131,462	658,704	528,317	130,387	1956
1957	117,579	365,500	483,079	1,306,688	877,609	648,182	229,427	1957
1958	14,531	174,360	188,891	404,320	215,429	127,706	87,723	1958
1959	*	*	288,845	586,667	297,822	*	*	1959

*Regional segregation not available.

DIRECTORY

Pacific Fisheries Organizations

(Data as of Jan. 1, 1960)

OFFICIAL

Bureau of Commercial Fisheries, U. S. Fish and Wildlife Service, Washington 25, D. C. — Director, Donald L. McKernan; Asst. Director, Andrew W. Anderson.

Pacific Regional Office, 6116 Arcade Bldg., 1319 2nd Avenue, Seattle, Wash.—Director, Samuel J. Hutchinson; Asst. Director, Donald E. Powell.

Biological Laboratory, 2725 Montlake Blvd., Seattle 2, Washington — Chief, Clinton E. Atkinson.

Fishery Technological Laboratory, 2725 Montlake Blvd., Seattle 2, Washington—Chief, Maurice E. Stansby.

Market News Branch, Pier 42 South, Seattle 4, Washington—Chas. M. Reardon, Supervisory Market News Reporter.

Exploratory Fishing and Gear Research Branch, 2725 Montlake Blvd., Seattle 2, Wash. — Chief, D. L. Alverson.

Market Development Branch, 2601 Market St., Seattle 7, Wash.—Fishery Marketing Specialist, Fred W. Hipkins.

Statistics Branch, 342 11th St., Astoria, Oregon — Fishery Marketing Specialist, Edward E. Poysky.

Statistics Branch, Pier 42, South, Seattle 4, Wash.—Fishery Marketing Specialist, F. M. Wood.

Loans & Grants Office, 6116 Arcade Bldg., 1319 Second Ave., Seattle, Wash.—E. C. Hinsdale.

California Area Office, 101 Seaside Avenue, Terminal Island, California—Area Director, Donald R. Johnson.

Biological Laboratory, P. O. Box 271, La Jolla, California—Chief, E. H. Ahlstrom.

Biological Laboratory, Jordan Hall, Stanford University, Menlo Park, Calif.—Chief, O. E. Sette.

Market News Branch, 208 Post Office Bldg., San Pedro, Calif.—Supervisory Market News Reporter, Victor J. Samson.

Market Development Branch, 101 Seaside Ave., Terminal Island, Calif. — Fishery Marketing Specialist, S. Ross Hatton.

Fishery Research Station, 101 Seaside Ave., Terminal Island, Calif. — C. J. Carlson.

Statistics Branch, 101 Seaside Ave., Terminal Island, Calif.—Fishery Marketing Specialist, Orman Farley.

Loans & Grants Office, 101 Seaside Ave., Terminal Island, Calif.—Lester T. Bradsbury.

Alaska Regional Office, Federal Bldg., Juneau, Alaska—Director, John T. Gharrett; Asst. Dir. for Management, Howard C. Baltzo; Asst. Dir. for Research, George Y. Harry; Asst. Dir. for Coordination, Harry L. Rietze.

Fishery Products Laboratory, 622 Mission Street, Ketchikan, Alaska — Fishery Products Technologist in Charge, Eystein Einset.

Hawaii Area Office, 2570 Dole St., P. O. Box 3830, Honolulu, Hawaii—Director, Vernon E. Brock.

Canada, Department of Fisheries, Pacific Area, 1110 Georgia St. West, Vancouver, B. C. — Director, Pacific Area, A. J. Whitmore; Asst. Directors, J. C. Stevenson, T. Taylor.

Fisheries Research Board of Canada, Ottawa, Canada—Chairman, Dr. John L. Kask, Ottawa, Biological Station, Nanaimo, B. C., Dr. A. W. H. Needler, Director, Technological Station, Vancouver, B. C.; Dr. H. L. A. Tarr, Director.

Inter-American Tropical Tuna Commission, Scripps Institute of Oceanography, La Jolla, Calif. — Chairman, Robert L. Jones; Director of Investigations, Dr. M. B. Schaefer.

International North Pacific Fisheries Commission, 6640 N. W. Marine Drive, Vancouver 8, B. C. — Chairman, George R. Clark, Canada; Executive Director, Roy I. Jackson.

International Pacific Halibut Commission, Fisheries Hall No. 2, University of Washington, Seattle 5, Washington — Chairman, William M. Sprules; Director of Investigations, H. A. Dunlop.

International Pacific Salmon Fisheries Commission, Dominion Building, New Westminster, B. C. — Chairman, DeWitt Gilbert; Director of Investigations, Loyd A. Royal.

Pacific Marine Fisheries Commission, 741 State Office Bldg., 1400 S. W. Fifth Ave., Portland, Ore. — Chairman, Herman P. Meierjurgen; Executive Director, Milton C. James.

Province of British Columbia, Dept. of Recreation and Conservation, Commercial Fisheries Branch, Parliament Buildings, Victoria, B. C.—Minister, Hon. Earle C. Westwood.

State of Alaska, Department of Fish and Game, 229 Alaska Office Building, Juneau, Alaska — Commissioner, C. L. Anderson; Chairman, Alaska Board of Fish and Game, Richard Janson, Jr.

State of California, Department of Fish and Game, 722 Capitol Ave., Sacramento, Calif.—Director, Walter Shannon; Marine Resources Branch, Richard S. Croker, Chief.

State of Oregon, Fish Commission, State Office Bldg., Portland 1, Oregon —Chairman, Harold T. Johnson; Director, A. M. Day.

State of Washington, Department of Fisheries, General Administration Bldg., Olympia, Wash. — Director, Milo Moore.

GENERAL

American Seafood Distributors Association, 821 15th St., N. W., Washington 5, D. C.—Executive Secretary, Elizabeth Guhring.

California Fisheries Council, 1248 East 6th St., Los Angeles 21, Calif.—President, Raymond H. Lemoi; Secretary, Bart A. Ghio.

College of Fisheries, University of Washington, 204 Fisheries Center, Seattle 5, Wash. — Dean, Dr. Richard Van Cleve.

Fisheries Association of British Columbia, Room 201, 325 Howe Street, Vancouver, B. C.—Chairman, J. M. Buchanan; President, J. Sinclair; Secretary, J. Macdonald.

DIRECTORY

Pacific Fisheries Organizations

(Data as of Jan. 1, 1960)

Fisheries Council of Canada, Room 703, 77 Metcalfe Street, Ottawa 4, Ontario — President, R. T. Hager, Vancouver, B. C.; Manager, C. G. O'Brien.

Fisheries Research Institute, College of Fisheries, Fisheries Hall No. 2, University of Washington, Seattle 5, Wash. — Director, Dr. William F. Royce.

Monterey Seafood Institute, 224 Scott St., Monterey, Calif.—President, Ken Sato; Vice-President, Secretary-Treasurer, Kay Nobusada.

National Canners Association, 1133 20th St. N. W., Washington 6, D. C. — President, Norman Sorensen; Executive Secretary, Carlos Campbell; Director, Fishery Products Division, George E. Steele, Jr.

National Canners Association, N. W. Branch, 1600 Jackson St., Seattle 44, Wash.—Chairman of the Advisory Board, Aubin R. Barthold; Manager, W. V. Yonker; Asst. Manager, Dr. G. Ivor Jones.

National Fisheries Institute, Inc., 1614 Twentieth St., N. W., Washington, D. C.—President, Ralph E. Carr, Kansas City, Mo.; General Manager, Chas. E. Jackson.

Northern California Sea Food Institute, 2677 Larkin St., San Francisco, Calif.—President, J. Lloyd Turnacliff; Secretary-Manager, John Gilchrist.

Pacific Fishery Biologists, Department of Fisheries, Seattle, Wash. — President, Ed Mains, Dept. of Fisheries, Seattle; Secretary-Treasurer, Cliff Millenbach, Dept. of Game, 600 Capitol Way, Olympia, Wash.

Pacific Fisheries Conference, 1308 Northern Life Tower, Seattle, Wash.—Acting Chairman, Edward W. Allen.

OPERATORS

Association of Pacific Fisheries — 302 Colman Bldg., Seattle 4, Washington—President, A. R. Barthold; Executive Secretary, Herald A. O'Neill.

California Fish Canners Association, Inc., Ferry Building, Terminal Island, Calif. — President, James R. Barry; Executive Director, Charles R. Carry.

Columbia River Salmon and Tuna Packers Association, P. O. Box 60, Astoria, Ore. — Executive Secretary, James H. Cellars.

Conference of Washington State Tuna Packers, 2000 Alaska Way, Seattle, Wash.—R. E. Silver, Chairman.

Halibut Producers Cooperative, 15th Ave., N.W. at Shilshole, Seattle 7, Wash.—President, Roger Bailey; Manager, W. B. Johnson.

Monterey Fish Processors Association, P. O. Drawer 72, Monterey, Calif.—President, Thomas E. Noice; Secretary-Treasurer, W. O. Lunde.

Northwest Fisheries Association, 4 Ferry Dock, Seattle 4, Wash.—President, Stephen Chase; Secretary, Chas. R. Pollock.

Northwest Salmon Canners Association, Colman Building, Seattle, Wash. — President, W. C. Hingston; Secretary-Treasurer, A. L. Rogers, Jr.

Oregon Seafood Dealers Association, Inc., Foot of 9th St., Astoria, Ore. — President, Harold Gramson; Secretary, Victor Horgan.

Oyster Growers Service Association, Rt. 3, Box 88, Dallas, Oregon—President, Glen De Haven.

Pacific Coast Oyster Growers Association, Rm. 4, Ferry Dock, Seattle, Wash. — President, Earl R. Brenner; Secretary-Treasurer, Charles R. Pollock.

Puget Sound Salmon Canners, Inc., Colman Bldg., Seattle, Wash.—President, R. O. Pierce; Executive Secretary, Herald A. O'Neill.

San Francisco Sardine Association, Pier 93, San Francisco 11, Calif. — President, John Costanza; Secretary-Treasurer, George J. Christo.

Shrimp Association of the Americas, Walsh Building, 910 East Levee St., Brownsville, Texas — Executive Secretary, J. E. Barr.

Southern California Fisheries Association, 1248 East 6th St., Los Angeles 21, Calif.—President, Joseph A. Sulentor; Secretary, Bart A. Ghio.

West Coast Shrimp Producers Association, 1440 Jackson St., Seattle, Wash.—Chairman, Ivar Wendt; Secretary, Steve Sarich.

Willapa Harbor Oystermen's Association, Bay Center, Washington.

VESSEL OWNERS

Alaska Trollers Association, Box 696, Ketchikan, Alaska — President, J. B. Cotant.

Alaska Herring Skippers Association, 1035 Securities Bldg., Seattle, Wash.—President, Bernt Gjerde; Business Manager, G. Bradley Walton.

American Tunaboat Association, 1 Tuna Lane, San Diego 1, Calif. — President, George Alameda; Manager, Earl Claggett.

California Commercial Fishermen's Association, Inc., 745 S. Seaside, Terminal Island, Calif. — President, Ray Hamilton.

Cordova Aquatic Marketing Association, Inc., Box 359, Cordova, Alaska—President, Henry Weise.

Drum Seiners Association, Inc., 125 Hawthorne Rd., Bellingham, Wash.—President, Joe Hanson; Secretary-Treasurer, Peter Zuanich.

Fishermen's Cooperative Association, Fishermen's Wharf, Berth 73, San Pedro, Calif. — President, Matt Simundich.

Fishermen's Cooperative Federation, Box 340, Prince Rupert, B. C., and 2195 Commissioner St., Vancouver 6, B. C.—General Manager, T. H. Sorensen; Secretary, K. F. Harding.

Fishermen's Marketing Association, Inc., 3019 Albee St., Eureka, Calif.—President, George Saubert; Secretary, W. O. Riley.

Fishermen's Marketing Association of Oregon, Inc., P. O. Box 838, Astoria, Oregon—President, Art Paquet; Secretary, A. H. Wright.

Fishermen's Marketing Association of Washington, Fishermen's Terminal, Seattle 99, Washington — President. Minor Lervold; Manager, John Wedin.

DIRECTORY

Pacific Fisheries Organizations

(Data as of Jan. 1, 1960)

Fishermen's Wharf Merchants Association, Exposition Fish Grotto, 160 Jefferson St., San Francisco, Calif.

Fishing Vessel Owners' Association of British Columbia, 193 E. Hastings St., Vancouver, B. C. — President, George A. Brajcich; Secretary-Manager, Harold A. Christenson.

Fishing Vessel Owners Association, Pier 59, Seattle, Wash. — President, Einar Pedersen; Manager, Harold E. Lokken.

Humboldt Fishermen's Marketing Association, Inc., 3019 Albee St., Eureka, Calif. — President, Larry Fitzpatrick; Secretary-Treasurer, W. O. Riley.

Juneau Fishing Vessel Owners Association, Box 668, Juneau, Alaska—President, John Lowell; Secretary-Treasurer, Edmund Krause.

Ketchikan Fishing Vessel Owners Association, P. O. Box 688, Ketchikan, Alaska—President, Eric Todal; Manager, Harold T. Henricksen.

LaConner Fishermen's Association, LaConner, Wash. — Secretary-Manager, William Alvord.

Lower California Fisheries Association, 935 W. Harbor Drive, San Diego 1, Calif.—President, Anthony S. Chiappe; Business Manager, J. J. Camillo.

Monterey Fishermen's Association, Monterey, Calif.—President, Leonard Goulart; Secretary-Treasurer, Ernest Martins.

Monterey Purse Seiners Association, 9 Municipal Wharf, Monterey, Calif. —Secretary, Horace Balbo.

Northwest Trawlers Association, Inc., Fishermen's Terminal, Seattle 99, Wash. — President, Dan Luketa; Manager, John Wedin.

Petersburg Fishing Vessel Owners Co-operative, Petersburg, Alaska — President, Erling Strand; Secretary, Vernon A. Counter.

Prince Rupert Fishermen's Cooperative Association, P. O. Box 340, Prince Rupert, B. C.—President, Carl Giske; Secretary & Manager, K. F. Harding.

Prince Rupert Fishing Vessel Owners' Association, 221 1st Street, Prince Rupert, B. C. — President, Martin Eriksen; Secretary, M. H. Waters.

Puget Sound Gillnetters Association, Rt. 3, Box 294, Anacortes, Wash. —President, David Milholland.

Purse Seine Vessel Owners Association, 5301 North Ruby St., Tacoma, Wash. — President, George Cuculich; Secretary, Nick Mladinich.

Salmon Trollers Marketing Association, Box 137, Fort Bragg, Calif. — President, N. A. Miles; Secretary, Charles Wirtanen.

San Diego Commercial Fishing Boat Owners, Inc., 4904 N. Harbor Drive, San Diego, Calif.—President, Nic Cordileone; Secretary-Treasurer, Reg. W. Richardson.

San Francisco Crab Boat Owners Association, 2907 Jones St., San Francisco, Calif. — President, Dominic Battaglia; Secretary-Treasurer, Albert Spadaro.

Southern California Fishermen's Association, 418 Harbor Lane, San Diego, Calif.—President, Victor Nigro; Vice-President, Jimmie Nigro; Secretary-Treasurer, Louis V. Nigro.

Tuna Boat Owners Association, Kewalo Basin, Honolulu, Hawaii—President, Oliver Kinney; Vice President, Kazuo Muraoka; Secretary-Treasurer and Manager, William A. Kanakanui.

Washington Reef Net Owners Association, Lumni Island, Wash. — President, Bruce Lintz; Executive Secretary, Glenn H. Schuler.

UNIONS

Alaska Fish Cannery Workers' Union of the Pacific, 217 Fifth Ave. South, Seattle, Wash. — Business Agent, Carlos de los Santos.

Alaska Fishermen's Union — LIU 1821, AFL-CIO, P. O. Box 74, Seldovia, Alaska.

Alaska Fishermen's Union, Bellingham Branch, Luther Building, P. O. Box 186, Bellingham, Wash.—Agent, Jack Wood.

Alaska Fishermen's Union, LIU 1821, AFL-CIO 49 Clay Street, San Francisco 11, Calif.

Alaska Fishermen's Union, LIU 1821, AFL-CIO, 214 Astoria Building, 1418 Commercial, Astoria, Oregon.

Alaska Fishermen's Union, LIU 1821, AFL-CIO, 200 Governor Building, Portland, Oregon.

Alaska Fishermen's Union, 84 Union St., Seattle, Wash.—Secretary-Treasurer, George Johansen.

Alaska Marine District Union of Fishermen, Cannery Workers and Allied Trades,, AFL-CIO, 832-A, Water Street, Ketchikan, Alaska—Executive Secretary-Treasurer, S. M. Ogden.

Alaska Native Brotherhood, Grand Camp, Sitka, Alaska — Grand President, Mark Jacobs, Sitka, Alaska; Grand Secretary, C. E. Peck, Juneau.

Alaska Salmon Purse Seiners Union, Wrangell, Alaska.

Bering Sea Fishermen's Union, SIU-AFL, Dillingham, Bristol Bay, Alaska —Secretary-Treasurer, Jim Downey.

Bristol Bay Cannery Workers, Local 46, SIU, AFL-CIO, Dillingham, Bristol Bay, Alaska—Business Agent, Jim Downey.

British Columbia Deep Sea Fishermen's Union, Prince Rupert, B. C.—President, Arne Paulson; Secretary, W. H. Brett.

Cannery Workers and Fishermen's Union of San Diego, 640 State St., San Diego 1, Calif.—President, Geo. Ledesma; Secretary-Treasurer, Lester Balinger.

Chinook Cannery Workers' Union, Local No. 12, Chinook, Wash.—Secretary, Mrs. Lucille Couch.

Columbia River Fishermen's Protective Union, 322 10th St., Astoria, Ore. — Executive Secretary, William Westerholm.

Copper River & Prince William Sound Cannery Workers Union (Independent), P. O. Box 939, Cordova, Alaska—Secretary-Treasurer, Richard Janson, Jr.

DIRECTORY

Pacific Fisheries Organizations

(Data as of Jan. 1, 1960)

Cordova District Fisheries Union (Independent), Box 939, Cordova, Alaska—Executive Secretary, Richard Janson, Jr.

Crab and Codfish Workers' Union, 2505 First Ave., No. 5, Sailors Union Bldg., Seattle, Wash.—Secretary, C. G. Dahlbeck.

Deep Sea Fishermen's Union of the Pacific, 5215 Ballard Ave., Seattle, Wash.—Secretary-Treasurer, Clarence R. Nordahl; Agent (pro tem), Helge P. Pedersen.

Fish Cannery Workers' Union of the Pacific, Monterey County, 320 Hoffman Ave., Monterey, Calif.—Business Agent, Lester Caveny; Secretary-Treasurer, Roy Humbracht.

Fish Cannery Workers Union of the Pacific, 450 Seaside Ave., Terminal Island, Calif.—President, Thomas Ivey.

Fish Plant Worker's Union of Newport, Oregon—Executive Secretary, Bertrice Parsons.

Fisheries Division, International Longshoremen's and Warehousemen's Union (Independent), 150 Golden Gate Avenue, San Francisco 2, Calif. —Regional Offices, Southern California, 350 N. Avalon Bldg., Los Angeles, Calif.; Northern California: Director, William Chester, 150 Golden Gate Ave., San Francisco, Calif.; Northwest and Alaska: Director, William Gettings, 84 Union St., Seattle, Wash.

Local 3—Secretary, Joe Jurich, 84 Union St., Seattle 1, Washington.

Local 20—Secretary, Magdalena Tapia, 980 Gull Street, San Diego, Calif.

Local 30—Secretary, John E. Rahm, Box 379, Ketchikan, Alaska.

Local 33—Secretary, John J. Royal, 339 West 7th St., San Pedro, Calif.

Local 37—Secretary, Amor Guerzon, Alaska Cannery Workers, 213 Main St., Seattle, Wash.

Local 83, P. O. Box 603, Pelican, Alaska.

Local 85, P. O. Box 492, Petersburg, Alaska.

Local 60-*C*,—Secretary, Elaine Todd, Seafood Cannery Workers, Box 343, Seward, Alaska.

Local 87, P. O. Box 768, Wrangell, Alaska.

Hawaii, 451 Atkinson Dr., Honolulu.

Fishermen's Union (Independent), P. O. Box 825, Fort Bragg, California.

Grays Harbor Gillnetters Union, 1718 Sumner Ave., Aberdeen, Wash. —Chairman, Eldon Lapacek; Secretary-Treasurer, Walfred Hendrickson; Board Chairman, Andy Niemi.

Marine Staff Officers, Office and Allied Personnel, Pacific District, 350 Fremont Street, San Francisco 5, California—George Issel, Representative.

Otter Trawlers Union, Box 983, Astoria, Oregon—President, Aldrich Veuhkola; Vice-President, Arthur L. Anderson; Secretary-Treasurer, Paul E. Graves.

Puget Sound Cannery Workers' Union, 1405 9th St., Anacortes, Wash. —Secretary-Treasurer, Mrs. Bernice Babarovich.

Seafarers' International Union of North America, AFL-CIO (Headquarters), 450 Harrison St., San Francisco, Calif.—Secretary-Treasurer, John Hawk.

Seine and Line Fishermen's Union, Monterey County, AFL-CIO, 233 Alvarado St., Monterey, Calif.—Business Agent, John Crivello.

Seine & Line Fishermen's Union of San Pedro, AFL-CIO, affiliated with S.I.U. of N.A., 446 West 9th Street, San Pedro, California—Secretary-Business Agent, John Calise.

Shoalwater Bay Oyster Workers Union, Local No. 14, SIU, AFL-CIO, Nahcotta, Wash..—Secretary, Ott Rutzer.

United Cannery Workers of Kodiak Island, AFL-CIO, SIU, P. O. Box 1035, Kodiak, Alaska—President, Harry Lindgren; Secretary-Treasurer, Kimball Poland.

United Fishermen and Allied Workers' Union, 138 E. Cordova St., Vancouver 4, B. C.—President, H. (Steve) Stavenes; Secretary, Homer Stevens; Business Agent, Alex Gordon; Northern Representative, R. L. Gardiner, Metropole Hall, 3rd Ave., Prince Rupert, B. C.

Vancouver Fishermen's Local—Business Agent, M. J. Canic, 138 E. Cordova.

Vancouver Shoreworkers Local—Jack Cook, 1932 W. 6th.

Steveston Fishermen's Local—Jim Ross, Box 308.

Steveston Shoreworkers Local—Ted Foort, 138 E. Cordova.

Victoria Local—F. J. Smele, 1852 Chestnut St.

New Westminster Local—Harold Wilcox, 138 E. Cordova.

Annieville Local—Allan Larsen, 9751 116th St., North Surrey.

Sundbury Local—Hideo Onotera, 8655 River Road, Rt. 1, New Westminster.

Ladner Local—Nick Spilchen, Ladner.

Woodwards Slough Local—Jack Hill, 947 Finn Rd., Rt. 3, Richmond.

Fort Langley Local—E. Burnell, Rt. 5, Langley Prairie.

Albion Local—Tarmo Puska, Websters Corners.

Nanaimo Local—F. W. Meabry, 1630 Waddington.

Gulf Islands Local—Kaye Bell, Chemainus, B. C.

Quathiaski Local—Jack Hewison, Rt. 1, Campbell River.

Pender Harbour Local—W. P. Malcolm, Madeira Park, B. C.

Westview Local—John Chambers. Box 581, Westview.

Namu Local—Steve Pawliuk, Namu.

Skidegate Local—Ed Regnery.

Sointula Local—Bill Mackie, Sointula.

Alert Bay Local—Gordon McNeil, Alert Bay.

Bella Coola Local—Glen McKay.

Sidney Local—Jack Reid, Swartz Bay Rd., Sidney, B. C.

Gibsons Local—Del Triggs.

Masset Local—Pat Setso.

Bella Bella Local—Al Newman.

United Fishermen of Kodiak, Alaska, AFL-CIO, SIU, P. O. Box 1035, Kodiak, Alaska—President, Harry Lindgren; Secretary-Treasurer, Kimball Poland.

Yakutat Marine District Union, SIU-AFL-CIO, Yakutat, Alaska—Secretary, John G. Williams.

JAPAN

By KENJI SAKAI

● Increasing awareness of the Japanese people as to the necessity for conservation of the living resources of the high seas may prove to be the most significant aspect of 1959 for Japan's fisheries and their future in international waters.

In support of this thesis, consider these words:

> *"In order for high seas fisheries to be conducted reasonably in a clear recognition of their international character, some policy which regards the maintenance of the resource in question as the paramount standard for judgment should be adopted, and only such operations as are guided by such a policy should be conducted by our nation."*

The words are those of Dr. Hiroaki Aikawa, chief of the investigation and Research Department of the Japan Fishery Agency. They were published over his signature in the monthly organ of the Japan Fisheries Society as 1960 opened.

A few years ago such a statement would have been flayed as "faint-hearted" by a national journalism full of a die-hard spirit of resistance against anything which would hamper Japanese operations on any fish, at any time, in any waters beyond the three-mile limit, and all under the slogan "The freedom of the seas," chanted in chorus.

Events of the last few years have surely changed this situation. Chanting of the slogan as it was formerly interpreted has ceased, and thoughtful Japanese today are coming to acknowledge an international trend which counts conservation as an obligation of freedom.

Thus it happened that late in 1959 the Japan Deep Sea Purse Seine Fisheries Association voluntarily filed a representation with the Fishery Agency, requesting a statutory measure for the protection of the mackerel and Jack mackerel resources in the waters all around Japan; and suggesting a system of monthly closed seasons somewhat like the weekly closures long applied in administration of the salmon fisheries of North America. The run of the mackerels has not dwindled, but decline in the average size of the individual fish has given some cause for concern.

Corporate "Constitution-Reformation"

● Along with the change in the thinking of the Japanese nation with respect to high seas conservation goes another noteworthy trend of 1959, which can be counted upon to become more fully manifest in 1960.

This development is generally called "constitution-reformation" in the gigantic fishing companies of Japan, such as Taiyo Gyogyo K.K., Nippon Suisan K.K., Nichiro Gyogyo K.K., and Kyokuyo Hogei K.K.

Although continuing their efforts to develop new fishing areas in all the oceans of the world, and thus to augment their output through their capitalistic efficiency and technical resources, such great companies apparently are coming to recognize that there is an impending and inevitable level above which the catch cannot be further increased. Thus they foresee a limit to their expansion as purely "fishing" companies.

The "constitution-reformation" of

1959 Japanese Canned Salmon Pack

(Unit, full case of 48 lbs. Actually, however, part of the 1/2-lb. flat cans were packed in cases of 4 doz. cans; part of the 1-lb. tall cans in cases of 2 doz.; and all of the 1/4-lb. flat cans in cases of 8 doz. cans.)

Can Size	Red	Pink	Chum	Silver	King	Tidbit	TOTAL
1/2-lb. Flat (8 doz.)	472,981	807,552	131,454	84,056	3,694	57,240	1,556,869
1/2-lb. Oval (8 doz.)	...	...	...	...	51	...	51
1/4-lb. Flat (16 doz.)	45,824	180,528	3,097	13,372	297	5,457	248,575
1-lb. Tall (4 doz.)	...	302,724	22,083	1,707	...	...	346,514
2-Kilo (2 doz.)	...	17,217	...	...	...	...	17,217
TOTAL	518,805	1,307,912	156,634	99,135	4,042	62,697	2,149,225

NOTE: Data from Japan Export Canned Salmon Manufacturers Association, whose members were: Nichiro Gyogyo K.K., Nippon Suisan K.K., Taiyo Gyogyo K.K., Kyokuyo Hogei K.K., K.K.Hokkaido Gyogyo Kosha, Hakodate Kokai Gyogyo K.K., Hoko Suisan K.K., and Hokoku Suisan K.K., operating salmon factory-ships. Some of the companies also maintain land equipment to can salmon. The table, however, includes the pack of members of the Japan Land-Pack Canned Salmon Manufacturers Association, numbering 37 in Hokkaido and 16 in Honshu in 1959. These land packers produced nearly 450,000 full cases of Pink salmon, with only a very small quantity of other species.

Furious Fishing is characteristic of the Japanese live bait fishing for this species of tuna. The high-bowed craft, numerous pole fishermen, and the water sprays are typical of the Japanese Skipjack operation.

these corporations — which might be called "diversification" in the United States—is revealed in tendencies to expand into other aspects of the food business, such as the production and packing of fruits, vegetables and meats. Capital expenditures in these lines are already enormous. The new ventures of one company take on such diverse character as fox-raising and baking.

- Notable in all this is the development toward *culture* of materials, as distinct from *capture*.

A case in point:

Taiyo Gyogyo K.K. and Nippon Suisan K.K. at the end of 1959 committed large sums to a joint investment for the establishment of a prawn or penaeus shrimp cultivation company. The operation will utilize a former solar salt bed on the Inland Sea near Hiroshima. The new company is headed by Dr. Motosaku Fujinaga, the scientist who developed the methods of artificial propagation and culture of these high-priced crustacea.

Dr. Fuginaga is widely known in North America through his connection with the work of the International North Pacific Fisheries Commission as fisheries investigation chief for the Japan Fishery Agency, responsibilities which have now passed to Dr. Hiroaki Aikawa.

Another instance of "constitution-reformation" diversification:

Nippon Gyogyo K.K. is constructing on the Inland Sea near Hiroshima a thoroughly modern oyster freezing and canning plant under an arrangement with the Coast Oyster Co. of South Bend, Wash.

Japanese High Seas Salmon Catch

(By area, in numbers of vessels, numbers of fish and percentage of catch)

YEAR	Operation Area	Mother-ship	Catcher* Boats	RED	PINK	CHUM	SILVER	KING	TOTAL	AVERAGE Catch per Catcher Boat
1952	Aleutian	3	57	744,929	703,402	644,453	24,446	1,379	2,118,609	37,168
1953	Aleutian	3	105	1,579,850	3,065,336	2,707,134	339,603	8,253	7,700,176	73,350
1954	Aleutian	7	205	3,816,301	5,804,010	9,403,818	1,398,258	74,224	20,496,611	99,983
1955	Aleutian	12	347	12,163,948 (24.1%)	16,507,827 (32.7%)	18,573,457 (36.8%)	3,183,813 (6.3%)	74,084 (0.1%)	50,503,129 (100%)	145,542
	Okhotsk	2	60	329,883 (2.4%)	9,408,875 (69.5%)	3,404,134 (25.2%)	392,096 (2.9%)	2,398 (0.0%)	13,537,396 (100%)	225,623
	Total	14	407	12,493,831	25,916,702	21,977,591	3,575,909	76,482	64,040,515	157.347
1956	Aleutian	14	447	9,633,546 (22.6%)	12,006,578 (28.1%)	17,166,916 (40.2%)	3,757,456 (8.8%)	136,520 (0.3%)	42,701,016 (100%)	95,528
	Okhotsk	2	59	656,404 (7.0%)	5,366,361 (57.3%)	3,223,943 (34.4%)	117,332 (1.3%)	994 (0.0%)	9,365,034 (100%)	158,729
	Total	16	506	10,289,950	17,372,939	20,390,859	3,874,788	137,514	52,066,050	102,897
1957	Aleutian	14	405	19,822,540	21,045,585	9,246,132	339,623	31,103	50,484,983	124,654
	Okhotsk	2	56	274,055	6,834,800	2.661,826	102,107	589	9,873,377	176,310
	Total	16	461	20,096,595	27,880,385	11,907,958	441,730	31,672	60,358,360	130,929
1958	Aleutian Okhotsk	15 1	432 28	12,025,000	15,546,000	18,786,000	3,393,000	45,000	49,798,000	108,256
1959	Aleutian	16	460	Quota and catch all species, 70,831 metric tons.						153.9 tons

NOTE: A small number of "investigation ships" is included in each year up to 1956. The table does not include the salmon catch made on the high seas by Japan home-based gillnet and longline vessels. The catch by operations area was not published by the Fishery Agency for 1958, and the combined totals were in round numbers of fish. Operation in the Okhotsk Sea was discontinued in 1959. Of the total catch of 85,000 metric tons agreed upon for 1959 operations with the Soviet-Japanese fisheries treaty zone, 70,831 metric tons were allocated to the mothership-system gillnet operation and 14,169 metric tons to the home-based vessels. In addition to these vessels, a number of smaller gillnet boats fished Pink salmon in the Japan Sea.

Japanese Canned Salmon Pack

(Unit: Full case of 48 lbs. net)

Year	Red	Pink	Chum	Silver	King	Tidbit	TOTAL
1951	...	...	...	...	...	..	195,776
1952	...	...	..	...	...	..	97,700
1953	...	...	...	...	..	.	208,689
1954	186,146	174,069	80,468	65,658	2,474	4,818	513,633
1955	623,542	675,860	282,890	174,208	3,155	24,097	1,783,752
1956	520,111	781,282	494,943	175,001	7,405	32,907	2,011,649
1957	1,061,307	1,112,608	198,777	11,925	999	38,107	2,423,723
1958	607,048	911,812	357,478	154,585	1,697	52,607	2,085,227
1959	518,805	1,307,912	156,634	99,135	4,042	62,697	2,149,225

NOTE:- .Segregation by species not available prior to 1954 but the packs were practically all pink. Packing on board factoryship on high seas began in 1953 but in that year only one factoryship had canning equipment with an output of only 38,427 cases including 21,450 cases of Red, although there was a little more pack of this species, etc., in that year from fish frozen in factoryships and brought to land canneries. Since then this practice is continued year after year. In latest years, of the total production about 200,000 cases mainly in Pink, Chum and Tidbit are consumed domestically and all the rest is being exported.

Lending particular interest to this venture is the fact that two of the largest fish products companies in North-America — British Columbia Packers, Ltd., and Van Camp Sea Food Co.— have very substantial interests in Coast Oyster Co.; and further that early this year there were in progress negotiations looking to the merger of Van Camp with the California Packing Corporation.

1959 Production—SALMON

● Review of the main items of Japanese fishery products in 1959 shows that the more expensive products, such as salmon and crab, did very well indeed, while the cheaper category, such as saury, suffered sharply.

At the third annual meeting of the Soviet-Japanese Fisheries Commission, which opened in Tokyo January 12 and continued until May 13, the catch quota for salmon which the Japanese could catch within the treaty waters on the high seas in 1959 was put at 85,000 metric tons, reduced from 110,000 metric tons for the year previous, and from 120,000 metric tons in 1957.

Beside closure of all the offshore waters of the Okhotsk Sea, a new closed area was established in Pacific treaty waters. Further, a catch limit of 8,000,000 Red salmon was set for gillnet vessels fishing for motherships. Of this quantity the Japan Fishery Agency subsequently specified 2,500,000 should be caught west of 165° East Longitude.

Of the 85,000-ton treaty-zone quota, 70,831 tons were allocated to the mothership system by a Japanese regulation, with the balance reserved to smaller gillnet boats land-based in Japan.

● Despite the reduction in the catch quota for treaty waters and the closure of Okhotsk Sea, the same number of motherships and catcher boats put to sea as in 1958. The departure of the fleet was delayed beyond the usual date by the protracted negotiations, but when they arrived at their first fishing grounds, well to westward of the Date Line, they found Reds and Chums abundant and weather conditions good for fishing.

Subsequently they found dense schools of Pink salmon in west Bering Sea waters. As the catch quota was taken readily, the fleet was able to leave the fishing area well ahead of the seasonal closing date.

Fishing conditions for Pink salmon also were extremely good all around Hokkaido, and so the pack of canned salmon from land and ocean operations combined reached 2,149,228 full cases.

Marketing of Salmon, 1959

● The 1959 salmon pack of Japan sold readily. The small amount of Pinks carried into the sales year was almost exactly balanced by that carried into 1960, leaving shipment of approximately 2,177,000 full cases of all varieties; and this in the face of advancing prices, as shown here, *fob. Japan in U.S. dollars*:

Item	Final 1958 Price	Sale 1 1959 Price	Sale 2 1959 Price
Red ½/96	$33.00	$37.00	$39.20
Red ¼/96	19.25	22.30	25.70
Silver ½/96	24.35	27.00	29.80
Silver ¼/96	14.00	16.50	19.60
Pink 1/48	17.00	17.00	17.00
Pink ½/96	18.30	19.00	19.80
Pink ¼/96	11.70	12.00	12.50
Chum ½/96	15.75	16.50	17.30

Distribution of the shipments, totalling 2,177,000, according to the Japan Canned Salmon Sales Co., was: United States and Canada, 554,000 cases; Great Britain, 1,100,000 cases; all other countries, 523,000 cases.

Effect of Great Britain's free buying since September, 1958, is plainly evident. In a smaller degree, similar action by France in 1959 served to increase sales to that country.

Looking to 1960

● Late in 1959 Director Kenjiro Nishimura, head of the Japan Fishery Agency, advised the Japanese salmon industry that it should be prepared to provide a reduction in the fleet to be active in 1960; and at the end of the year he tendered the industry's leaders his plan for the adjustment. In November, 1959, E. M. Krokhin, chief of a Soviet inspection team visiting Japan, repeatedly told the Japanese that, in his view, the Soviet might withdraw from salmon fishing in all the Far East district in 1960, due to the depleted condition of the resource which he said continued to be manifest in 1959.

In view of these positions, it is expected that the mothership and gillnet catcher boat fleets to be dispatched in 1960 would be somewhat reduced. This does not necessarily imply reduction in the canned salmon pack, as in most years fishing and packing capacity has exceed actual requirements.

At the same time that he called for reduction in North Pacific salmon operations, Mr. Nishamura pointed out that the Japanese fish-reducing factory ships in eastern Bering Sea would be doubled to 4 in 1960; and that gillnet boats displaced from salmon fishing might receive priority in trawl fish-

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Japanese Trawling in East Bering Sea

YEAR	Freezership Operations			Factoryship Operations			Total Catch, Metric Tons	Fish Meal, Metric Tons
	Ships	Trawlers	Catch in Metric Tons	Ships	Trawlers	Catch in Metric Tons		
1956	4	12	24,136	---	--	---	24,136	--
1957	4	13	24,155	---	--	---	24,155	--
1958	2	9	18,248	1	20	28,406	46,654	4,676
1959	4	18	29,946	2	44	128,586	158,532	19,390

ing to provide material for the doubled fish meal operation.

The Canned Crab Picture

● Coincident with the reduction in Japan's high-seas salmon quota under the Soviet-Japan treaty, the factoryship quota for canned King crab in Okhotsk Sea suffered a moderate reduction to 280,000 cases of 48 cans, 6½ oz., against 320,000 cases in 1928.

When the pack of the *Tokei Maru* in east Bering Sea, and that of the Hokkaido land canneries is added, the 1959 King crab pack reached 510,000 cases.

Despite an upward movement in the export price of canned crab, there was contracted to the end of November a total of 450,000 cases. Rough breakdown shows 250,000 cases going to the United States and Canada, 140,000 cases to Great Britain, and 60,000 cases to other countries.

With Japan as a whole enjoying unprecedented economic prosperity in 1959, domestic consumption of canned crab increased substantially. Thus only a small quantity of the crab of export grade remained unshipped at year-end, and the business was rated in a sound and stable condition, despite a regrettable decline in the 1959 pack of Kegani crab in Hokkaido.

Sardine and Saury Suffer

● In contrast to conditions with the high-priced commodities, salmon and crab, business in the sardines and saury trades was affected adversely.

So far as production was concerned, Japan canned sardines were in a fairly stable condition, although the volume was limited; but the trade felt a pinch in April, 1959, as the foreign exchange situation in the customer countries of Southeast Asia deteriorated badly.

At that time unsold stocks were counted as 300,000 standard cases, but as time went on the export situation greatly improved. During the year packers delivered some 700,000 cases of new pack, of which some 470,000 cases could be counted as sold overseas by the end of November; and by the dint of vigorous trading efforts it appeared possible that the remaining 230,000 cases could be cleared by the end of March, 1960.

American Samoa Tuna Landings, Jan.-Nov., 1959

	Jan.-Nov. 1959	Jan.-Nov. 1958
	(1,000 lbs.)	
Albacore	19,819	19,799
Yellowfin	3,779	4,924
Big-eyed	919	1,007
Skipjack	14	.....
Total	24,531	25,730

Note: Most of these tuna were landed by Japanese vessels; a small amount by South Korean vessels.

● In 1959 those engaged in the production and sale of canned saury, or mackerel pike, as the fish is often called, tasted bitter hardship after phenomenal prosperity only a year previous. Fishing was neither good nor poor, but the landed price held high.

At the end of November packers' shipments to the joint sales corporation stood at 926,000 cases, including some 400,000 cases carried over from the previous season. Of the total, only about one-fifth could be sold overseas despite every effort of the distributing firms. Not a single case could be squeezed into Burma, due apparently to South West Africa competition. The Philippine Islands were closed to Japanese canned saury as result of imposition in July of a new marginal tax of 25% on this item. This in a market which once absorbed as much as 400,000 cases annually. Efforts to secure repeal of the tax were unsuccessful into 1960.

The Japan Export Canned Saury Manufacturers Association is seeking other markets for this silvery fish with its high nutritive value at low price. Canada has begun to take some trial shipments, and an effort is being made to interest United States importers.

Late in 1959 a new trade, although still small in volume, was reported for saury fillets canned in oil. These were reported selling well in Africa, Belgium and The Netherlands.

Near the end of 1959 the packers of canned Jack mackerel, an item often associated with saury packing, formed a nation-wide industrial cooperative association in order to put in good order the export trade in this relatively new product of Japanese industry.

Japanese Canned Tuna* Exports by Country of Destination, January-June 1958-59

Destination	January-June 1959	January-June 1958	Jan.-Dec. 1958
	(1,000 actual cases)		
U. S. A.	939	1,215	2,191
W. Germany	105	113	287
Canada	80	70	149
Switzerland	67	40	77
Italy	38	10	37
Belgium	30	29	69
Netherlands	21	20	33
Lebanon	22	11	23
Britain	8	9	58
Egypt	15		
Others	144	65	205
Total	1,469	1,582	3,129

* Includes all types of packs—in oil, in brine, etc.

Japanese Oyster Operations, 1959

● As a great trading company pre-

Japanese Canned Crab Pack

(In cases of 48 6-1/2 oz. cans)

YEAR	KING CRAB			OTHER CRABS				TOTAL	No. of Factory-ships	YEAR
	Ocean	Land	Total	Zuwai	Kegani	Hanasaki	Total			
1953	58,240	140,178	198,418	3,966	44,386	5,462	53,814	252,232	1	1953
1954	59,850	85,063	144,913	7,327	286,141	11,520	304,988	449,901	1	1954
1955	206,419	172,000	378,419	4,840	352,955	5,000	362,795	741,214	3	1955
1956	427,350	115,000	542,350	20,000	305,000	25,000	350,000	892,350	6	1956
1957	404,250	85,000	489,250	25,000	250,000	20,000	295,000	784,250	5	1957
1958	379,850	165,000	544,850	45,000	140,000	20,000	205,000	749,850	5	1958
1959	350,000	160,000	510,000	45,000	125,000	16,000	186,000	696,000	5	1959

NOTE: Japanese factoryship operation restarted in 1953. Only King crab is packed by factoryship operation though until 1955 a few Zuwai crabs had been packed besides.

dicted just a year ago, Japan exported to the United States in 1959 a little less than 120,000 cases of canned oysters, cases of 48 cans approximately equal to the No. 1 Eastern Oyster tin in contents. This is in addition to 73,769 cases of smoked oysters in oil (50 cans, 3 2/3 oz., "quarter oils").

According to the association of packers of sundry shellfish, export of the canned product to America would remain within a quantity of 130,000 cases in 1960 because of the limited amount of oysters available for canning after the fresh oyster requirements of Japan's domestic market are satisfied.

During 1959 the Hiroshima prefectural government moved vigorously to apply accepted sanitary standards in the shucking stations of the prefecture, which is Japan's leading producing area for oysters for food.

As has been mentioned previously, there is under construction in the vicinity of Hiroshima a plant for canning and freezing which is expected to be the world's largest and most advanced.

Tuna Trade is Troubled

- Extremely poor summer Albacore fishing shadowed the tuna fisheries of Japan in 1959, and with it occurred a 2½-month stoppage in the open sale of canned tuna to the United States as result of controversy between the packers and the trading firms in regard to the export price quotation.

Due to the factors, the year's global export target of 2,200,000 cases could not be achieved, to the great regret of the Japanese canners.

In the field of export trade in frozen tuna, instead of the anticipated large build-up in the intermediate sale of Japanese-caught Atlantic tuna in the United States, there was a striking shift of Japanese interest toward European countries, notably Italy and Yugoslavia.

Late in 1959 the Japan Export Frozen Tuna Sales Co., Ltd., was reorganized to enable it to handle exports of frozen Yellowfin by freighter shipment, in addition to frozen Albacore.

- Through much of 1959 there was an insistent demand from United States sources, originally private, but later governmental, for a conference between the governments of the United States and Japan on matters of controversy with respect to tuna.

In Japan those concerned were either quite reluctant or plainly opposed to such a conference when it was first proposed. However, the meeting was finally agreed upon, and was held in Tokyo in the fall, when information and opinions were exchanged freely and without reserve on many of the complicated aspects of the vast world fishery for tuna.

Although the meeting adjourned without definitive action or agreement on the part of the governments, as time went on it became apparent in Japan that those who had been close to the conference felt that it had served a good purpose.

- For Japan the year 1959 was marked by the initiation of a vast and systematic national program for investigating the tuna resources of the Pacific and Indian Oceans. To this end a number of prefectural guidance vessels and fisheries high schools training craft, to say nothing of research ships of the Japan Fishery Agency, were assigned to tasks in the sea area.

Thus it is anticipated that sometime in the future there will be held a world conference on tuna problems—as there was on sardines in the fall of 1959—and Japan proposes to be prepared with comprehensive data.

As an early product of these studies, it can be reported that a fisheries high school training ship at about the first of 1959 found an excellent fishing for Bluefin in a remote offing west of Australia. Since then Japan's landings of "Bluefin Indo" have enormously increased in wintertime.

Conversely, in the fall of 1959 it became apparent that the rate-of-catch in Atlantic tuna fishing had declined

JAPAN'S WORLDWIDE 1958 TUNA LANDINGS

Area of Landing	Species			
	Yellowfin	Albacore	Bigeye	Total
		(Metric Tons)		
Japan	76,735	46,327	70,048	1/ 361,590
Samoa	1,966	8,169	432	10,567
New Hebrides	1,020	2,593	135	3,748
Italy	11,478	115	109	11,702
Brazil	6,033	1,119	210	2/ 7,396
Cuba	1,575	91	22	1,688
Trinidad	1,984	24	23	2,036
Panama	3,483	394	18	3,895
Haiti	2,384	219	47	2,650
Argentina	5	28	—	33
Israel	210	2	19	231
Motherships	4,657	4,096	1,911	3/ 10,710
TOTALS	111,530	63,177	72,979	4/ 416,248

1/ Includes skipjack (147,388 tons) and bluefin (21,092 tons).
2/ Includes bluefin (34 tons).
3/ Includes skipjack (42 tons) and bluefin (4 tons).
4/ Includes skipjack (147,430 tons) and bluefin (21,130 tons).
Source: Japanese Fishery Agency.

Japanese Mid-Pacific Mothership Tuna Operations

YEAR	Factory-ship	Catcher Boat	CATCHES (Unit, metric tons)						
			Yellowfin	Albacore	Bigeye	Bluefin	Skipjack	Others	TOTAL
1950	3	44	4,140	49	581	1	12	2,416	7,199
1951	6	88	5,473	138	2,702	2	19	4,069	12,403
1952	2	38	4,468	79	598	7	30	2,067	7,249
1953	2	37	4,830	323	831	7	12	3,031	9,034
1954	6	122	4,317	3,950	1,332	687	16	5,387	15,689
1955	3	103	2,921	4,705	767	6	28	4,933	13,361
1956	3	94	2,021	3,689	1,495	5	14	3,954	11,180
1957	3	96	5,153	3,125	1,854	5	42	3,923	14,105
1958	3	88	4,656	4,096	1,910	4	41	3,674	14,384
1959	4	160	---	---	---	---	--	---	20,000*

NOTE: Source, Ministry of Agriculture and Forestry, Statistics and Survey Division. "Others" include Broad-bill swordfish, Black marlin, White marlin, Striped marlin, Sailfish, Sharks, etc. *Estimated. For years prior to 1955 data are in tons of 2,000 lbs.

Japanese Foreign-Based Tuna Operations

(By foreign bases, trips landed, catch by species, in metric tons.)

YEAR	SAMOA-BASED							NEW HEBRIDES-BASED							TOTAL
	Trips	Yellowfin	Albacore	Bigeye	Marlin	Other	Total	Trips	Yellowfin	Albacore	Bigeye	Marlin	Other	Total	
1955	194	2,917	3,253	609	1,075	195	8,049	---	---	---	---	---	---	---	8,049
1956	244	1,958	3,428	544	1,098	65	7,094	---	---	---	---	---	---	---	7,094
1957	255	1,523	5,534	499	1,079	29	8,666	5	28	91	1	22	7	150	8,816
1958	269	1,966	8,171	432	946	23	11,540	155	1,020	2,592	135	456	104	4,309	15,849
1959	250	---	---	---	---	---	10,000*	105	---	---	---	---	---	4,300*	14,300*

*Estimated. Data from Ministry of Agriculture and Forestry, Statistics and Survey Division.

Japanese Frozen Atlantic Tuna Direct Exports and Transshipments 1959

	Jan. - Mar.		Apr. - June		July - Sept.		Oct. - Dec.	
	Tons	Trips	Tons	Trips	Tons	Trips	Tons	Trips
United States (transshipments)	7,592	21	6,082	19	2,751	11	840	4
Direct landings by Japanese fishing vessels:								
Italy	2,864	9	2,612	7	4,362	18	2,080	8
Yugoslavia	435	1	1,469	5	3,325	10	3,160	9
France	---	--	476	2	1,972	5	2,368	8
Dakar (Africa)	---	--	---	--	1,145	4	392	3
Others	454	2	---	--	574	3	530	3
TOTAL other than U.S.	3,753	12	4,557	14	11,378	40	8,530	31

NOTE:- Short tons for shipments to United States, and metric tons for other countries.

drastically. While a seasonal downturn is anticipated, that of late 1959 was too acute to be shrugged-off, and caused great uneasiness.

Is this decline in Atlantic tuna rate-of-catch only a temporary phenomenon? Or does it initiate a permanent trend?

Those were questions the Japanese tuna industry was studying with the keenest interest as it went into 1960.

Japanese Fisheries Directory

- Japanese fishery agencies and associations, their addresses and principal officers as of January 1, 1960, were:

General

Fishery Agency, Ministry of Agriculture and Forestry, Kasumigaseki, Chiyoda-ku, Tokyo—Minister, Takeo Fukuda; Director, Kenjino Nishamura.

Japan Fishery Society, Sankaido, Akasaka Tameike, Minato-ku, Tokyo —President, Tatsunosuke Takasaki.

Vessel Owners

Federation of Japan Tuna and Bonito Fisheries Cooperative Associations, Tuna Building, 2-7 Hirakawa-cho, Chiyoda-ku, Tokyo — President, Bunpei Hamaji.

Operators

Japan Canners Association, 567 Marunouchi Building, Marunouchi, Chiyoda-ku, Tokyo—President, Tomohachi Ueta.

Japan Canned Food Exporters Association, Naigai Building, Marunouchi, Chiyoda-ku, Tokyo—Director-in-Chief, Takeshi Tizawa.

Japan Frozen Food Exporters Association, Kohan Building, 3-3 Kasumigaseki, Minato-ku, Tokyo — Director-in-Chief, Kenkichi Nakabe.

Japan Export Frozen Tuna Manufacturers Association, Tuna Building, 2-7 Hirakawa-cho, Chiyoda-ku, Tokyo—Director-in-Chief, Kenkichi Nakabe.

Japan Export Canned Tuna Manufacturers Association, Kokubu Building, 1-2 Nihonbashi-dori, Chuo-ku, Tokyo — Director-in-Chief, Tomohachi Ueta.

Japan Export Canned Salmon Manufacturers Association, 2-4 Ote-machi, Chiyoda-ku, Tokyo — Director-in-Chief, Shuji Tani.

Japan Export Land-pack Canned Salmon Manufacturers Association, Kanyu Kaikan, 7-25 Ironai-cho, Otaru, Hokkaido — Director-in-Chief, Katsusaburo Usui.

Japan Export Canned Saury Manufacturers Association, Naigai Building, Marunouchi, Chiyoda-ku, Tokyo — Director-in-Chief, Wasaburo Nemoto.

Aleutian Area Whaling by Japanese

YEAR	Factory-ship	Catcher Boat	WHALES CAUGHT						PRODUCTS (Unit, metric ton)		
			Blue	Fin	Humpback	Sei	Sperm	Total	Meat, Skin	Fin, Whale Oil	Sperm Whale Oil
1952	1	4	55	213	37	14	...	319	4,054	2,313	. .
1953	1	4	90	470	42	98	. .	700	7,320	4,951	.
1954	2	10	145	1,316	136	129	490	2,216	15,389	13,847	4,060
1955	2	14	70	1,360	117	21	1,084	2,652	13,269	10,882	8,144
1956	2	15	70	1,415	37	48	1,598	3,168	17,038	12,343	12,579
1957	2	17	70	1,405	...	166	1,700	3,341	19,469	12,305	12,995
1958	2	15	70	1,331	24	330	1,500	3,255	21,593	11,901	12,823
1959	2	15	70	1,450	...	32	1,800	3,352	23,083	12,821	14,417

MARKETS

- Salmon marketing prospects could be rated favorable as they appeared at the opening of 1960, while obviously indistinct as result of low inventories and the unknowables of seven months to come before new pack replenishments could be expected.

Prices were high, but this did not seem a serious determent to sales, except perhaps in the areas affected particularly by the Steel crisis.

Prospects for production in 1960 were not promising, with the exception of Bristol Bay; and this is the off-year for Pinks on Puget Sound, and the low side of the cycle in most other areas.

- Red inventories were far too limited to be affected by the possibilities in the widely divergent expectations of the biologists.

The sort of a run foreseen by one body of scientific thought would be

UNITED STATES CANNED SALMON PACK

YEAR	Red or Sockeye	Pink	Chum or Keta	Med. Red Coho or Silverside	King or Chinook	Steelhead	GRAND TOTAL	YEAR
1916	2,217,259	1,755,433	1,260,131	529,096	579,615	19,013	6,360,547	1916
1917	2,908,995	3,432,573	1,173,040	431,160	597,704	23,937	8,567,409	1917
1918	2,711,251	2,425,500	1,677,416	647,020	589,786	25,170	8,076,143	1918
1919	1,338,401	2,079,775	1,995,446	593,192	664,844	19,899	6,630,347	1919
1920	1,541,286	1,618,103	1,090,103	251,533	586,749	13,659	5,101,705	1920
1921	1,870,396	845,184	288,539	238,595	369,756	10,142	3,622,612	1921
1922	2,181,197	1,659,781	650,079	491,643	313,992	24,983	5,231,675	1922
1923	1,974,495	2,930,985	702,536	415,084	362,660	25,997	6,411,757	1923
1924	1,533,237	2,619,013	1,266,654	418,336	378,218	29,862	6,245,320	1924
1925	1,187,784	2,659,144	1,214,304	477,159	481,071	14,859	6,034,321	1925
1926	2,218,638	3,334,787	1,067,053	429,942	408,136	33,128	7,491,684	1926
1927	1,430,116	1,993,679	656,911	459,209	481,914	31,643	5,053,472	1927
1928	2,010,956	2,791,061	1,302,422	445,496	335,907	16,605	6,902,447	1928
1929	1,819,469	3,298,127	1,115,924	367,847	358,085	24,104	6,983,556	1929
1930	1,232,340	3,154,364	683,451	566,250	390,756	16,932	6,044,093	1930
1931	1,792,111	3,684,092	615,441	285,930	390,563	12,355	6,780,492	1931
1932	2,200,104	2,118,250	1,006,776	257,735	318,770	13,218	5,914,853	1932
1933	2,321,784	2,726,783	727,917	243,055	323,176	18,027	6,360,742	1933
1934	2,876,981	3,825,989	849,721	371,521	322,968	14,901	8,361,990	1934
1935	882,408	3,624,148	893,612	364,625	257,773	14,888	6,037,454	1935
1936	2,553,160	4,590,422	1,249,188	287,224	283,941	19,282	8,983,217	1936
1937	2,168,528	3,947,271	786,397	236,708	369,725	17,568	7,526,197	1937
1938	2,677,723	3,222,559	845,433	294,257	218,989	15,248	7,274,209	1938
1939	2,020,200	2,791,790	668,274	227,143	238,827	25,293	5,971,527	1939
1940	1,040,241	2,910,972	919,368	375,668	269,217	33,436	5,548,902	1940
1941	1,308,740	4,790,573	851,902	440,653	372,624	33,162	7,779,654	1941
1942	1,194,985	2,819,501	1,089,555	406,032	320,531	21,911	5,852,515	1942
1943	2,004,204	2,384,186	895,265	191,135	185,340	16,261	5,676,391	1943
1944	1,618,729	2,087,621	987,382	202,364	203,761	19,222	5,119,079	1944
1945	1,227,162	2,549,848	693,803	239,086	181,367	19,314	4,910,580	1945
1946	1,350,629	2,060,243	694,728	217,004	222,744	17,767	4,563,115	1946
1947	1,911,284	2,363,069	666,497	293,058	356,665	22,091	5,612,664	1947
1948	1,734,091	1,308,689	1,054,637	370,610	338,037	20,362	4,826,426	1948
1949	1,075,427	3,236,317	718,878	277,495	207,868	8,931	5,524,916	1949
1950	1,290,249	1,097,811	1,317,761	352,126	205,981	10,534	4,274,462	1950
1951	936,120	2,001,352	981,524	466,880	244,832	14,862	4,645,570	1951
1952	1,413,670	1,175,054	1,290,667	397,534	159,086	19,011	4,455,022	1952
1953	1,162,614	1,396,388	966,418	207,144	158,437	19,645	3,910,646	1953
1954	1,323,830	1,151,126	1,329,756	215,123	129,933	13,379	4,163,147	1954
1955	749,328	1,682,000	466,353	198,806	176,661	13,737	3,361.885	1955
1956	1,182,554	1,129,346	758,059	188,571	165,957	8,171	3,432,658	1956
1957	963,566	943,564	924,543	203,553	142,066	7,605	3,184,897	1957
1958	948,965	1,550,025	911,816	150,699	137,425	6,313	3,705,243	1958
1959	675,347	755,997	512,694	162,089	105,346	7,872	2,219,345	1959
10 Yr. Average	1,064,624	1,288,266	945,959	254,252	162,572	12,113	3,735,287	10 Yr. Average

NOTE:- Figures represent full cases of 48-lbs. net. Figures for the last year shown are from PACIFIC FISHERMAN's compilation; those for previous years have been revised from official data. "Average" is for the last ten years.

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important in any case, but there is a question as to whether it could be harvested fully under Alaska's regulations as they stood early this year.

- Some elements in the salmon trade, notably those in British Columbia and Puget Sound, were looking beyond the possibilities of Bristol Bay in 1960 to the greater certainties of the Fraser River in 1961 and 1962.

A distinctive feature of the forward planning of some companies with stakes in these areas is said to call for two-year 1960-61 contracts for export sales. As outlined roughly, these would involve in both years the same proportion of a buyer's overall export purchases.

- Chronic shortage of domestic supplies of canned salmon continued as the primary problem of United States marketers of that commodity in 1959.

Along with it—and because of it—went price levels which, while they may have retarded the *rate* of movement, certainly did not stop it.

Domestic shortages could be offset by imports, and the distribution of canned salmon in the United States rolled through 1959 in a condition which could be classed as *comfortable*, and certainly free from disaster.

This freedom from disaster applies to marketing. The low level of salmon production in Alaska, and notably in certain areas of the state, produced operating losses and cost levels which could not be offset by increased prices.

- Initial movement of canned salmon in 1959 was unusually brisk, a condition attributable in part to the pre-Lenten promotion. It was stimulated further by advanced announcement of upward movement of Pink talls to $22. Expectation of the International Pacific Salmon Fisheries Commission that the Puget Sound Pink pack would be among the smallest on record also served to sharpen interest in this variety. Knowledge that salmon trap operation in Alaska would be virtually eliminated made further contribution to the upwelling interest in prime Pinks of 1958 packing.

Reds took on strong tone early in 1959, talls being unavailable before March except under advertised brands at premium price. Alaska Red halves were scarce and priced at $21, only $1 below Puget Sockeyes. Tall Cohoes were on call as substitutes for Reds. Chums came in for attention under

INITIAL PRICES FOR CANNED SALMON

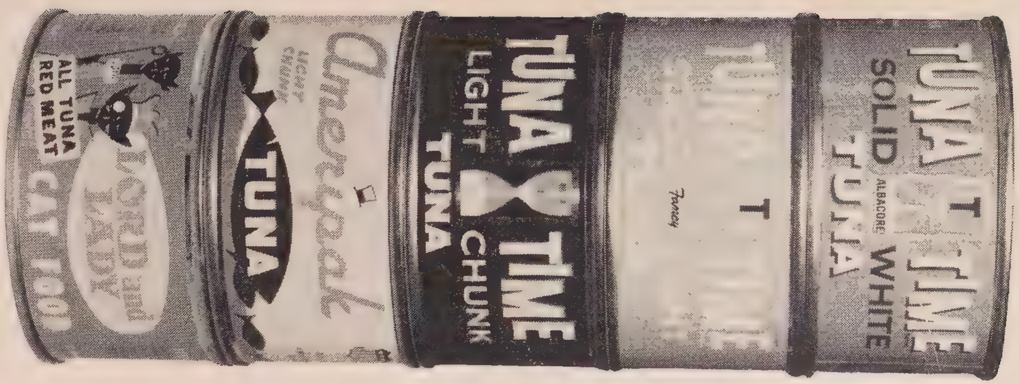
(Per case of 48 cans. Prices in dollars and decimals)

YEAR	Chinook Columbia Riv. Fancy	Sockeye Puget Sound	Red Alaska		King Alaska	Coho — Medium Red		Pink		Chum	
	Halves	Halves	Talls	Halves	Talls	Talls	Halves	Talls	Halves	Talls	Halves
1910	$4.4	$4 4	$5.4	$4.	$5.4	$5.	$3.2	$3.2	...	$3.1	...
1911	5.2	5.2	6.4	4.5	7.2	5.8	4.	4.	$3.2	3.8	$3.
1912	5.	5.2	5.6	4.6	5.6	4.6	3.2	2.6	2.2	2.5	2.
1913	5.	4.2	4.6	3.8	4.	3.4	2.8	2.6	2.2	2.2	2
1914	5.	5.4	5.8	4.4	5.6	4.6	3.3	3.6	2.8	3.4	2.6
1915	5.	5.4	6.	4.6	5.	4.6	3.	3.	2.3	2.8	2.1
1916	5.	5.6	6.	4.8	5.4	5.2	3.6	3.6	3.	3.4	2.7
1917	7	7.	9.4	6.6	9.	8.	5.4	6.6	4.6	6.4	...
1918	8.	8	9.4	6.6	9.	9.6- 9.	6.4	6.6	4.6	7. - 6.4	4.4
1919	8	10.	13.	9.	12.5	12.	8.	9.	5.6	8.6	5.
1920	10.	12	13.	9.	12.	8.	6.	6.	4.4	4.6	3.6
1921	8.4	10.	9.4	8.	7.	6.	3.8	4.4	3.2	4.	2.6
1922	13.	10.	9.	7.	7.	5.	4.	4.6	3.2	4.2	2.8
1923	10.	10.	9.	6.6	8.	5.[illegible]	4.	5.	3.6	4.8	3.4
1924	8.8	9	9. -10.	6. - 7.	8.6- 8.4	7. - [illegible].	5.4- 4.2	5.2- 5.	3.6	4.8	3 4
1925	8.4	9 4-10	14	9.	13. -12.	11. -10.	7.4- 7.	5.8- 5.	4. - 4.4	4.6- 4.4	3.6- 3 4
1926	9.4	10.	10.	8.	9.	9.	6.	5.4	4.2	5.	3.6- 3.2
1927	9.4	11.	12.4	9. - 8.6	11.4-10.6	10. - 9.	6.6- 6.	6. - 5.4	4.6- 4.4	5.4- 5.2	3 8
1928	9 8	10.4	9.4	7.4	8.6- 8.	7.4- 7.	5.4	6.6	4.4	6.4	4.
1929	10.4-10.	10.	10.6	8.	9.	8. - 7.4	5.6- 5.4	6.	4.4	5.4	4.
1930	10.	8.	12.4	8.	10.6	9.	5.6	4.	3.	3.6	2.8
1931	8	8	9.4	6.6	7.	7. - 6.4	4.8- 4.6	3.4	2.8	3.2	2.6
1932	6.	6. - 5.	5 8- 5.	4.	4.4	4.	3.2- 3.	3.4- 3.	2.4	3. - 2.8	...
1933	7 6- 7.	7. - 6 6	7. - 6 6	4.8	6.	5.4	...	4.8	3.	4.6	2.8
1934	7.2	5.4	6.8- 6.4	4.8- 5.	5.4	5.	4. - 3.8	4.2- 4.	3.2	4. - 3.8	3.
1935	7 2- 7.	7.	9.4- 9.	6.6- 6.4	8. - 7.	6.6	4.4	4.2- 4.	3.2	4. - 3.8	
1936	8.	7	8. - 7.6	6.	7.	6.6- 6.4	4.4	4.	3.4- 3.	3.7- 3.6	3. - 2.8
1937	8.4	8.4	10.	6.8	9.	8.	5.	5.	3.4	4.8	3.2
1938	9 2- 8.4	7.	7.8- 7.4	5.6	7.6- 6.8	6.4	5.	4.	3.	3.8- 3.6	2.8
1939	9 2- 8.6	8.	9. - 8.6	6.7- 6.4	8.4	7. - 6.4	5. - 4.8	5.2- 5.	3.6- 3.4	4.6	3.2
1940	9.	8 4	9 6	6.6	9.2	7.4	4.8	5.4	3.8	4.8	3.4
1941	10.4	10.	13.6-13.4	8 2	12.	...	7.	7.	4.8- 4.4	6.8	4.6- 4.2
1942	13.	11.4	15.	10.	. .	11.8-11.6	8.	8.	5.6	7.6	5. - 5.4
1943	13	11.4	15.	10.	14.	11.8-11.6	8.	8.	5.6	7.6	5. - 5.4
1944	13	11.4	15.	10	14.	11.8-11.6	8.	8.	5.6	7.6	5 - 5.4
1945	13	11.4	15.	10.	14.	11.8-11.6	8.	8.	5.6	7.6	5. - 5.4
1946	18 5	19.	22. -20.	16.5-13.4	20.	17. -16.	11.6	12.	8.4	11.6- 9.4	8.
1947	20 -19	22. -19.	24.5-22 6	17.5-16.	22. -21.4	22.	15.4-15.	19. -17.2	13.5-11.5	18.5-16.5	12.5-11.1
1948	23 5-22.	22.	27. -26.	19. -18.	26. -24.	25.	17.5-15.	23. -22.	15. -13.	20. -22.	13.5-12.
1949	20 -18.	...	26.5-25.	16. -15.	24. -22	22. -21.	12.5	16.	10.	15.	9.5- 9.
1950	19. -21.	19 -20.	28. -29.	18.	23.	19. -22.	15.5	22. -24.	15.	20. -21.1	12.
1951	21 -23	19. -21.	29. -31.	18.	26	25	15.	21.	12.5	18.	11.
1952	22 -23.	20. -19.	27. -30.	17.5-18.	25.	21.22.	12. -13.	18. -20.	12.	16.	9.
1953	20. -21.	18.5-17.5	27.	17	24.	20.	12.	18	10.2-10.5	14.	8 -8.5
1954	20. -21	18 5-16.5	28. -29.	16. -18.	25.	23.	13.5	20.	12.5-13.	15.	9.
1955	22. -23	20. -21.	32. -33.	18.5-19.7	28.	26.	15.	22. -23.	13.5-14.5	18.	10. -10.5
1956	23. -24.	23. -24.	33. -34.	21. -23.	29. -30.	28.29	16.	23. -24.	13. -14.5	21.	11.5-12.
1957	24. -26.	23. -24.	33. -34.	21. -22.	28. -29.	27. -28.	15. -16.	23.	13.	19. -21.	11.5-12.
1958	25. -26.	19. -21.	33. -35.	18. -21.	28. -29.	27. -28.	15. -16.5	21.	13. -13.5	17.	11. -11.5
1959	25. -26.	24. -25.	36. -37.	23. -24.	29. -30.	29. -32.	18. -18.5	24. -25.	13.5-14.	21.	11.5-12

NOTE: The title of this tabulation has been changed from "OPENING PRICES" to "INITIAL PRICES", and the prices of pre-war years, originally quoted per dozen each are converted to the per case basis which is now in general use.

The prices are quoted in dollars and decimals thereof, rather than in dollars and cents, and are based largely on formal "opening prices" announced as such by leading sellers; they are not limited exclusively to such quotations. The formal "opening prices" of different concerns are often incomplete, and vary so widely that a full presentation of them might be confusing. The purpose of this tabulation is to present comprehensively for each year the earliest prices at which substantial quantities of the pack were sold.

The prices here quoted for the war years are the "ceilings" established by the government. Those for 1946 are the prices announced by the majority of large packers after "de-control".



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Value of Principal Canned Fish Products

Year	PACIFIC SALMON			SARDINES		Tuna	Mackerel	Oysters	Shrimp	Clams	Crabs	Miscellaneous Fish Products	GRAND TOTAL
	Pacific Coast States	Alaska	Total	New England States	California								
1921-25*	$11,060,592	$29,457,922	$40,518,514	$5,781,523	$4,428,409	$5,751,385	.....	$2,704,433	$3,928,434	$1,721,051	$71,087	$1,552,481	$66,457,317
1926-30*	12,772,490	38,329,082	51,101,572	6,281,996	9,494,787	8,990,774	$979,927	2,344,887	5,022,925	2,517,544	36,729	2,703,368	89,474,509
1930-35*	7,301,890	28,513,777	35,815,667	2,974,505	4,519,462	8,646,033	2,117,791	1,392,686	3,836,331	2,242,896	109,235	2,649,056	64,303,662
1936	5,309,438	44,751,633	50,061,071	5,740,454*	7,302,273	14,715,391	3,542,895	2,180,869	4,672,198	2,976,297	130,753	3,242,053	94,564,254
1937	8,386,165	44,547,769	52,933,934	4,998,373	8,592,117	18,995,779	2,673,608	2,932,681	7,130,747	3,013,446	269,699	3,634,551	105,174,935
1938	5,728,892	36,636,897	42,365,789	2,367,045	7,102,358	15,183,636	2,896,220	1,886,476	4,872,393	3,189,628	260,134	3,322,210	83,445,889
1939	7,339,727	34,441,122	41,780,849	7,075,096	9,553,663	20,079,567	2,588,695	2,378,945	5,397,662	3,798,319	259,756	3,714,998	96,627,550
1940	6,575,176	31,474,492	38,049,668	3,736,394	8,975,257	23,727,560	4,101,369	2,526,859	4,318,325	3,778,363	308,890	4,659,256	94,181,941
1941	11,199,317	56,217,601	67,416,918	12,590,958	18,091,873	19,397,887	3,503,718	2,997,114	4,882,544	3,711,029	547,617	5,659,466	138,684,157
1942	13,673,968	48,300,209	61,974,177	12,162,451	15,509,964	30,742,493	3,693,082	3,598,703	7,347,330	3,791,058	1,755,065	4,893,094	144,996,947
1943	5,110,847	57,824,267	62,935,114	11,104,570	14,352,359	31,430,189	5,271,203	2,821,556	5,360,647	2,802,420	1,194,483	4,334,350	141,188,792
1944	5,187,136	51,196,140	56,383,276	14,819,803	15,225,919	40,836,117	7,033,997	2,283,429	4,854,799	3,820,612	1,361,458	6,983,036	152,914,237
1945	7,942,102	44,644,303	52,586,405	12,077,201	15,346,472	47,407,451	4,046,691	2,029,953	1,918,633	7,391,098	883,767	9,669,714	152,800,571
1946	17,003,459	53,157,194	70,160,653	20,275,590	19,895,649	59,135,823	7,575,291	5,249,272	8,428,735	11,145,047	4,720,119	21,770,334	227,629,455
1947	31,969,134	88,669,542	120,638,676	28,310,674	16,538,375	90,609,175	15,018,633	4,259,485	8,192,004	8,642,235	2,705,391	16,398,742	310,678,920
1948	24,008,466	96,528,730	120,537,196	29,359,114	21,892,893	112,612,296	9,850,834	4,777,531	7,791,313	8,329,639	4,846,494	18,621,357	336,181,479
1949	22,167,812	81,263,168	103,430,980	21,051,675	21,334,825	97,710,325	6,848,930	6,525,207	11,203,325	8,779,018	3,490,885	15,128,735	295,503,905
1950	27,187,060	82,354,118	109,541,178	21,209,033	26,345,609	112,830,094	7,491,816	7,096,235	12,773,346	10,839,889	3,121,269	20,086,878	331,335,347
1951	29,388,514	79,237,355	108,625,869	14,635,352	19,851,806	99,046,206	6,259,222	5,931,276	12,187,049	11,773,909	3,586,558	19,313,048	301,210,295
1952	21,906,773	76,357,016	98,263,789	21,502,970	5,655,463	113,034,510	11,362,697	7,047,441	12,998,814	12,209,558	2,087,019	21,666,937	305,829,198
1953	24,067,839	58,172,629	82,240,468	16,954,119	8,314,304	126,257,608	5,038,512	6,559,309	18,946,622	12,629,803	2,898,016	27,034,913	306,873,674
1954	28,915,972	63,339,170	92,255,142	18,152,815	12,590,594	142,148,816	2,508,715	5,829,378	13,691,253	12,301,033	3,699,293	27,840,827	331,017,866
1955	24,507,762	56,848,555	81,356,317	9,333,350	12,444,322	125,259,064	3,333,979	7,003,967	13,562,310	12,057,326	2,190,664	37,022,692	303,563,991
1956	16,523,868	76,948,880	93,472,748	16,749,794	9,005,082	140,338,342	6,434,860	6,222,329	15,800,229	13,619,064	2,738,587	43,095,428	347,566,463
1957	23,245,194	62,564,386	85,809,580	14,715,243	7,064,975	135,906,903	7,403,682	7,008,471	13,005,132	13,316,654	3,104,606	47,430,826	334,766,072
1958	26,712,763	65,531,283	92,244,046	15,873,963	16,806,005	161,793,000	2,657,012	5,341,609	20,790,602	12,523,194	3,070,355	56,766,254	387,866,040

*Average. Note - California sardine figures for recent years include anchovies.

AMERICAN CANNED FISH VALUES BY AREAS

YEAR	PACIFIC COAST						States Other than Pacific TOTAL	United States TOTAL
	Alaska	California	Oregon	Washington	TOTAL	% of Nat'l. Total		
1935	$26,072,966	$25,252,965	$ 2,851,987	$ 4,955,117	$ 59,133,035	78.8	$15,860,684	$ 74,993,719
1936	45,078,945	26,296,129	2,972,959	3,582,880	77,930,913	82.3	16,726,956	94,657,869
1937	45,041,499	30,741,773	4,163,681	5,276,928	85,223,881	81.2	19,713,750	104,937,631
1938	37,059,151	25,232,688	3,638,815	3,762,575	69,693,229	83.5	13,752,660	83,445,889
1939	34,775,988	31,639,354	4,622,664	5,192,077	76,230,083	79.0	20,228,510	96,458,593
1940	31,836,480	36,949,395	5,294,488	3,987,170	78,067,533	82.9	16,046,513	94,114,046
1941	56,453,007	39,830,950	7,704,434	7,130,960	111,119,351	80.1	27,564,806	138,684,157
1942	48,874,227	44,506,354	12,375,323	8,319,559	114,075,463	78.8	30,567,784	144,643,247
1943	58,479,130	46,842,918	7,242,950	2,975,728	115,540,726	81.8	25,615,584	141,156,310
1944	52,072,335	53,653,337	11,720,608	3,706,586	121,152,866	79.5	31,158,318	152,311,184
1945	45,491,662	60,219,179	12,543,519	7,326,616	125,580,976	82.0	27,219,595	152,800,571
1946	55,081,941	85,457,037	12,164,093	18,202,350	170,905,421	75.1	56,724,033	227,629,454
1947	89,135,362	116,493,682	20,626,850	24,949,347	251,205,241	80.9	59,475,179	310,680,420
1948	97,657,187	137,876,592	21,926,969	18,497,700	275,958,448	82.1	60,223,031	336,181,479
1949	82,225,067	119,497,465	13,683,517	23,009,231	238,415,280	80.6	57,088,625	295,503,905
1950	82,828,503	140,251,694	19,250,557	25,370,759	267,701,513	81.3	62,661,340	330,362,853
1951	80,748,052	122,572,382	15,454,209	27,312,377	246,087,020	81.7	55,123,275	301,210,295
1952	77,586,903	124,582,452*	14,284,187	21,362,466	237,816,008	77.7	68,013,190	305,829,198
1953	59,477,956	132,298,470	15,629,708	24,357,778	234,363,912*	76.5	72,515,896	306,873,674
1954	65,107,077	145,247,976	18,386,407**	32,524,805	261,266,265	78.9	69,760,245	331,026,510
1955	58,289,037	133,649,363	22,450,859***	25,671,266	240,060,525	79.1	63,514,935	303,575,460
1956	78,758,792	143,145,330	30,200,880§	18,452,364	270,557,366	77.8	77,009,097	347,566,463
1957	64,634,485	136,612,240	29,964,077§	27,576,185	258,786,987	77.3	75,979,085	334,766,072
1958	67,453,542	162,962,108	38,659,049§	31,577,105	300,651,804	77.5	87,214,236	387,866,040

*Includes Hawaii. **Includes Hawaii and Samoa. ***Includes Samoa, Hawaii, Puerto Rico.
§Includes Samoa, Hawaii, Puerto Rico and a minor quantity canned in Maryland.

the general wave of Lenten interest and moved up from $17 to $18 on several price lists by the end of February.

Early 1959 interest in salmon acquisition by the trade left the primary market almost bare by the time Lent had passed. Imports were called upon to cover the most critical cases. Domestic Pink talls by the end of March stood at $22, with all stocks which had been available at $21 apparently exhausted. This condition was reflected in import deliveries, with 31,000 cases of 48 Pink halves and 61,000 full cases of 48 Pink talls from Japan received in Seattle alone during March. First quality summer Chums at the same time were advancing $1 to $18.

● Comfortable character of U.S. salmon selling for 1959 was rather definitely confirmed by June, when it was evident to the thoughtful that supply would be limited with resultant high prices.

Forecasts of prospective production

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for 1959 were to prove remarkably accurate for once.

Departures from expectations proved moderate, and generally cancelled-out so far as overall supply was concerned.

Most significant shift from the anticipated pattern was Japan's pack of more than 2,000,000 cases of salmon in spite of the severe limitation of 85,000 metric tons imposed by the Soviet Union on the Japanese high seas catch in the Soviet-Japan treaty waters. Increasing its operation *outside* treaty waters, Japan actually succeeded in *increasing its total pack* in spite of the limitation. Here was a potential source of weakness in the sales picture, although it was not clearly discerned until late in the year, and then was modified fortuitously by French action in easing salmon import limitations. This enabled Japan to market sufficient Pink halves in Europe to maintain satisfactory firmness, despite some cancellations from the United States.

- Late August brought a real return to "opening prices" reminiscent of the time years ago when "the Corporation" (Calpak) spoke up with a commanding voice and named its figures for salmon of all grades and sizes. Others could follow as closely as they liked, but the "opening prices" were set.

Over the years "opening prices" have come to mean less and less, and rarely to involve the entire list; but 1959 saw return to the old-time pattern with Calpak naming: Red talls, $37; Red halves, $25; Pink talls, $24; Pink halves, $13.50; Chum talls, $21.

Libby posted the same prices, plus Chum halves at $12.

The other factors modified the prices according to pattern and the degree to which their brands are advertised, Red talls being available as much as $2 below the openers.

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tered on Red halves, where it is to be noted particularly that the Calpak opening price put both Alaska Red and Puget Sockeye halves in parity at $25.

American Sockeye packers generally priced their goods at $24, and found ready takers.

Principal surprise of the early, active selling was the placing of export orders at $24 for halves and $13.50 for quarters, the level of the domestic market. Normally the export buyers demand, and receive, concessions from the domestic pricing.

Call for quarters Sockeye was particularly loud both in British Columbia and on Puget Sound and the Columbia River. Some were bought at $14 before the end of August.

- Fall sales were featured by growing firmness, which was emphasized as the limited character of the Chum run in British Columbia and Puget Sound came into sharp relief against the less-than-half-of-normal Chum production in Alaska.

By the end of the year Chums were up to $22, with some sellers at $23.

Thus the year closed on a rising note.

British Columbia

- Shortage of stocks, owing to a relatively light pack, and higher selling prices resulting from steadily rising costs as well as competition for limited supplies, were among many problems confronting British Columbia's salmon industry in 1959. Notwithstanding all these factors, the year was not unfavorable, in a marketing sense. Everyone seemed to do rather well with the resources at his disposal.

In fact, the year had some decidedly cheerful features and, for the long term, they indicated important advances. The industry continued to feel the benefits resulting from the United Kingdom's relaxation in trade restrictions that had such a buoyant impact on the market in 1958, and, to a less important degree, operators found themselves able, for the first time since World War II, to export fresh and frozen salmon to Britain as a result of further easing of currency and import regulations.

What the United Kingdom had done was symbolic of what appeared to be almost a world-wide re-opening of trading channels that had long been clogged by dollar troubles, high tariffs, quotas and other impediments. Countries that for years had bought sparingly, if at all, simply because they couldn't afford it, were now selling more goods to the dollar countries and in return they at last had dollars to spend—some of them on canned salmon. Countries like Ghana, for instance, were buying canned Sockeye from B. C.; French Africa was in the market for canned Pinks and Chums. France was buying more salmon than for many years—Coho in halves and quarters and Pink salmon, too, especially if good quality was assured. Belgium and many other countries were in the market, also. The easier dollar position was thawing markets on a much wider scale than in any other postwar season.

- The difficulty, so far as B. C. canners was concerned, was that there was hardly enough canned salmon to go round, and this despite the industry's forecast in retaining a substantial carryover from the previous season, when more than 1,000,000 cases of Sockeye alone were packed. By comparison, only about 255,000 cases of Sockeye were packed in 1959, and the over-all pack was not much more than half the previous season's. But B. C.'s packers held over a total of 354,000 cases, of which 172,000 were Sockeye, so this was regarded as good insurance for a season that would surely show a much reduced catch. The carryover also included roughly 103,000 cases of Pinks and 58,000 cases of Chums.

The packers were also careful to make sure that the Canadian domestic market, which in recent years has been the most consistent and dependable, was not neglected. Sales did not approach the record years 1953-54 when the year's sales totalled some 935,000 cases, but the Canadian market in 1958-59 absorbed well over 800,000 cases, even more than in 1957-58, and it probably would have taken a lot more if supplies had been available and prices were not so high.

Prices, of course, were the highest on record. In the export market, the price of a case of half-pound flats (96's) was $46, compared with $37 a year before and $20 just after the war. The increase was not so pronounced in grades other than Sockeye, perhaps, but it was unmistakable. A case of Pink talls or flats, (48's), that you could buy for less than $7 in 1942 was quoted in 1959 at $22. Actually, of course, in 1942 you couldn't buy any

BRITISH COLUMBIA CANNED SALMON PRICES

	SOCKEYE			COHO, SPRING, BLUEBACK			PINK			CHUM	
YEAR	1-lb. Talls or Flats 48's	½-lb. Flats 96's	¼-lb. Flats 96's	1-lb. Talls or Flats 48's	½-lb. Flats 96's	¼-lb Flats 96's	1-lb. Talls or Flats 48's	½-lb. Flats 96's	¼-lb. Flats 96's	1-lb. Talls or Flats 48's	½-lb. Flats 96's
1942-4b	$16.25	$17.50	$10.50	$11.50	$12.75	$ 8.12½	$ 6.25	$ 7.50	$ 5.00	$ 6.25	$ 7.50
1945-6b	17.65	18.90	11.20	12.90	14.15	8.82⅓	7.65	8.90	5.70	7.65	8.90
1946-c	18.90	20.30	...	13.90	15.25	...	8.30	9.70	...	8.30	9.70
1947	23.50	25.00	15.00	20.00	21.50	13.00	12.50	14.50	...	12.00	13.50
1948	28.50	30.00	17.50	24.50	26.00	15.25	16.50	18.00	...	15.00	16.50
1949	31.50	33.00	19.00	23.50	25.00	15.00	16.50	18.00	...	12.50	14.00
1950	31.50	33.00	19.25	23.50	25.00	15.00	17.50	19.00	12.00	14.00	14.00
1951	36.00	38.00	21.50	27.50	29.00	17.00	19.00	20.50	12.75	16.50	18.00
1952	31.50	33.00	19.00	20.50	22.00	13.50	15.00	16.50	10.75	13.00	14.50
1953	28.50	30.00	17.50	20.50	22.00	13.50	15.00	16.50	10.75	13.00	14.50
1954	30.00	32.00	18.50	22.50	24.00	14.50	16.00	17.50	11.75	14.50	15.50
1955	35.50	37.00	21.50	26.50	28.00	17.00	18.00	19.50	12.75	15.00	16.50
1956	38.50	40.00	23.00	30.50	32.00	19.00	21.00	22.50	14.25	19.00	20.50
1957	38.50	40.00	23.00	27.50	29.00	17.50	21.00	22.50	14.25	18.00	19.50
1958	35.50	37.00	21.50	26.50	28.00	17.00	20.00	21.50	13.75	15.00	16.50
1959	40.00	46.00	27.00	32.50	36.00	22.00	22.00	24.50	16.25	19.00	20.50

NOTE: - Quotations for 1948 and 1947 packs represent packers' opening prices to the domestic market. Prices received for 1950 sales under the contract to the United Kingdom were considerably less than those quoted. Prices marked 'c' were established by the Canadian government in Dec. 1946, for sales to the domestic trade, but are also roughly equivalent to those received for export to the United Kingdom, etc. Prices marked 'b' were those paid by the British Ministry of Food in 1945-46 and 1942 to 1944.

In 1954 there was considerable variation in prices by major packers, especially for Sockeyes and Chums. Two prices were paid for Chums, according to grade, Fancy, $14.50 & $15.50; Standard, $13 and $14.50.

canned B. C. salmon unless you were a United Kingdom buyer because during the war years the bulk of the pack went to Britain, and in one year all of it.

For the Canadian consumer, prices of canned salmon were higher, also, of course. There was more than one increase during the year, and during the fourth quarter of the year a half-pound can of Sockeye was retailing at 58¢, six cents higher than during the summer. Average wholesale price increase for Sockeye was about three cents per quarter-pound can, four cents for a half-pound and one cents for a pound. Basic reasons for the increase, of course, were: (1) The smaller catch due to lighter runs and a two weeks' fishing strike; (2) The higher price the packers had to pay for raw fish.

But sales were generally good, and resistance to price was not particularly noticeable. Most people in the industry now realize somewhat reluctantly that canned salmon is no longer a staple but a luxury and that even though prices are high there is no real substitute for it and customers who want it will pay for it. There was evidence last year that salmon buyers overseas, while always selective, will not be as insistent as they used to be for certain grades. Pinks, Cohos and Chums received more favor than in other years —partly because buyers had to take what they could get or go without, but also because there was a growing recognition of salmon other than the traditionally popular Sockeye.

The industry was threatened by prosecution under the Canada Combines Act, federal government investigators questioning the long established procedure of bargaining over prices between a group of packers and the union of organized fishermen. Packers and fishermen contend that this method is not against the public interest and the only feasible one so far developed. Hearings were to be held early this year to determine the government's policy.

TUNA

- Tuna prices remained relatively low in the United States markets throughout, and this fact doubtless contributed significantly toward the constantly rising volume of consumption.

Margins were reduced, but volume was high, and the astonishing popularity of tuna with the American consumer continued to rise.

Distress, where it was evident at all, centered in lightmeat tuna, for the restricted production of Albacore from both domestic and imported sources found the output of this grade short of demand.

The leading tuna packers continued their individual sales programs with unusual effectiveness, supplementing industry promotion.

- Boston appeared to stand out in 1959 as the most enthusiastic American metropolitan tuna market, with the possible exception of Los Angeles, where tuna is particularly at home.

New England exhibits a marked preference for Albacore, but likes tuna in any form.

One market study examined the amount of display accorded tuna in 21 supermarkets in New York, San Francisco, Chicago and Boston. The latter city led in amount of space devoted to tuna, Chicago coming second with only about two-thirds as much.

While all of the markets stocked the principal brands of tuna, there was a notable increase in the proportion of private labels in Boston and New York to the tuna displays as a whole.

In Boston and Chicago lightmeat and Albacore tuna shared the display space of the supers on approximately equal basis; but in New York Albacore comprised 60% of the shelf space accorded tuna.

In San Francisco the preference was found to be for lightmeat.

Chunk style tuna appears to be a favorite of the West, while the Northeastern region tends to favor fancy solid pack.

Retailers generally consider tuna as one of the essential commodities for the attraction of trade through advertised "specials". Along with coffee, sugar and a few other staples, canned tuna is favored for the special price attraction of trade.

Japan's Atlantic Tuna Exports to U.S. Decline

- Japan's trade in Atlantic frozen tuna transhipped by fishing vessels for the American market declined sharply in the second half of 1959, despite an increased tonnage available. This business, which began to attain importance in August, 1958, suffered severe set-back in the second quarter of 1959 as result of the large rejections of the tuna upon its arrival at canneries on the Pacific Coast of the United States.

This resulted in a re-routing of the shipments during the last half of the year, with the main volume landed direct by Japanese vessels in Italy, France and Yugoslavia.

- Remarkable recent rise in the Albacore content of Japanese longliners' Atlantic tuna catches provided renewed American interest in this area early in 1960. Whether the increase represented a seasonal variation in catch composition, or whether the Japanese have discovered areas of Albacore concentration is as yet obscure.

It is known definitely that late in 1959 one longliner with a fare of 200 tons had 90% Albacore. Of the 350-ton delivery of another Japanese vessel in the same period, 70% was Albacore.

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Tuna Prices Per Ton Paid Fishermen

YEAR	Albacore	Yellowfin	Bluefin	Skipjack	YEAR	Albacore	Yellowfin	Bluefin	Skipjack
1917	$30	$50	$45	$40	1939	125	110	100	90
1918	125	90	80	40	1940	140	110	110	100
1919	200	90	80	40	1941	140	110-130	110-120	100-110
1920	300	90	80	40	1942	300-400	190	180	170
1921	145	80	80	60	1943	325	200	190	180
1922	250	100	80	60	1944	325-390	200	190	180
1923	300	80	75	60	1945	390	200	190	180
1924	360	80	80	60	1946	390-440	200-280	190-270	180-260
1925	200	80	80	60	1947	410-600	310-340	300	290-320
1926	175	110	110	75-80	1948	550-740-425	340	330	320
1927	Nominal	110	90	75	1949	400-350	340-310	330-300	320-290
1928	200 up	120	90	75	1950	400	310	300	290
1929	300	120	110	70-80	1951	400-250-300	310	300	290
1930	200	120	110	90	1952	350-400	320	310	280
1931	200	120-100	90	90-80	1953	400	320	310	280
1932	200	80	75	70	1954	400-410	350-330	340-320	320-290
1933	200	100	90	80	1951	350-310-330	330-270	320-210	290-230
1934	200	100	90	80	1956	375-300	270	280-260	230
1935	125-160	100	90	80	1957	310-280-300	270-230-270*	260-200-260	230-190-230*
1936	Nominal	105-110	95-90	85-90	1958	425	275-283-263	260	235-252-223
1937	215	120	110	100	1959	435-400	270-240-253	260-240	230-200-217
1938	215-130	120	110	100					

NOTE:- Prices quoted are per ton of round fish in good condition landed at cannery dock All fish rejected by inspectors, either as landed or after precooking, are deducted from the gross weight.

Figures given undertake to state the prevailing market level. Where a range in prices is shown it represents a definite change in market level in the course of the season, the movement being from the first to the second figures stated. Quotations for 1943 through 1945 are OPA ceiling prices for cannery fish, and represent the total amounts which may be paid the fishermen in cash or allowances, save for the cost of war-risk insurance. The lower figures in 1946 are ceiling prices and the higher represent levels attained after removal of OPA controls.

*Final prices quoted for Yellowfin and Skipjack were the minimum prices acceptable for opening bids on the tuna auction initiated at San Diego in 1957 by the American Tunaboat Association.

1959 - IMPORTS OF CANNED TUNA TO U. S.

(Pounds)

Countries		Oct. '58	Nov. '58	Dec. '58	Jan. '59	Feb.	March	April	May	June	July	August	Sept.	TOTAL
JAPAN -	TOTAL	4,416,000	2,176,000	253,000	3,858,000	2,478,000	3,183,000	4,403,000	2,562,000	3,430,000	4,343,000	3,433,000	2,651,000	37,186,000
Albacore:	Oil	---	20,000	2,000	---	20,000	3,000	17,000	24,000	10,000	41,000	27,000	22,000	186,000
	Brine	1,221,000	610,000	38,000	774,000	440,000	556,000	813,000	646,000	1,150,000	837,000	709,000	614,000	8,408,000
Other Tuna:	Brine	3,195,000	1,546,000	213,000	3,084,000	2,018,000	2,624,000	3,573,000	1,892,000	2,270,000	3,465,000	2,697,000	2,015,000	28,592,000
PORTUGAL -	TOTAL	355,000	158,000	---	118,000	88,000	24,000	2,000	---	99,000	326,000	260,000	271,000	1,701,000
Lightmeat Tuna:														
	Brine	355,000	158,000	---	118,000	88,000	24,000	2,000	---	99,000	326,000	260,000	271,000	1,701,000
PERU	TOTAL	---	175,000	---	---	797,000	---	---	22,000	---	12,000	---	---	1,006,000
Lightmeat Tuna:														
	Oil	---	17,000	---	---	661,000	---	---	---	---	12,000	---	---	690,000
	Brine	---	158,000	---	---	136,000	---	---	22,000	---	---	---	---	316,000
AZORES -	TOTAL	132,000	76,000	---	86,000	---	14,000	14,000	5,000	29,000	132,000	99,000	---	587,000
Lightmeat Tuna:														
	Brine	132,000	76,000	---	86,000	---	14,000	14,000	5,000	29,000	132,000	99,000	---	587,000
OTHERS -	TOTAL	592,000	280,000	36,000	662,000	135,000	228,000	297,000	470,000	540,000	422,000	924,000	1,482,000	6,068,000
Albacore:	Oil	7,000	6,000	5,000	19,000	1,000	7,000	25,000	29,000	10,000	---	2,000	8,000	119,000
	Brine	119,000	62,000	---	234,000	117,000	65,000	63,000	161,000	134,000	188,000	400,000	381,000	1,924,000
Other:	Oil	49,000	35,000	17,000	1,000	17,000	---	---	4,000	73,000	13,000	6,000	29,000	244,000
Tuna:	Brine	417,000	177,000	14,000	408,000	---	156,000	209,000	276,000	323,000	221,000	516,000	1,064,000	3,781,000

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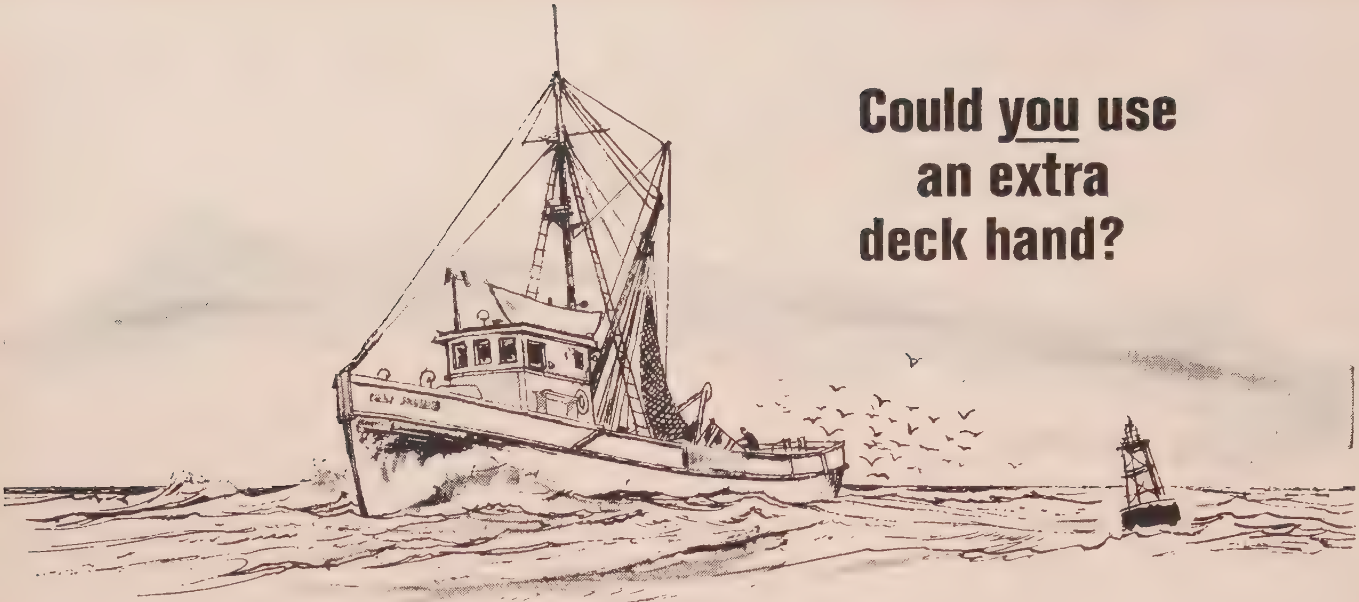

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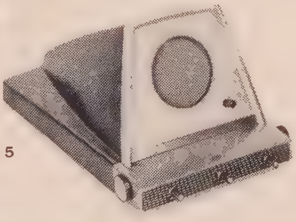

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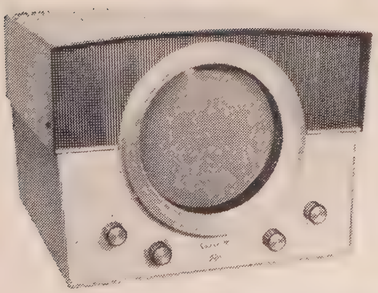

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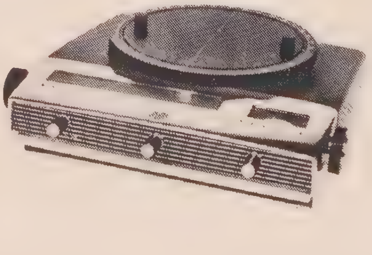

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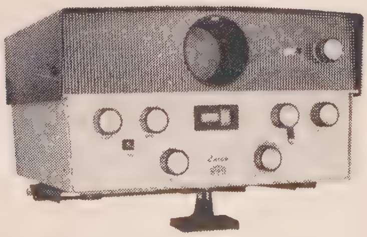

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UNITED KINGDOM

By

F. A. HITCHINS
Ministry of Agriculture,
Fisheries and Food,
London.

● In 1958 United Kingdom fishing vessels landed 865,988 tons of fish valued at approximately £50,000,000, of which herring accounted for over 110,000 tons by weight and nearly £2,800,000 by value. The freshwater fishery was of little significance commercially, production being only some 1,262 tons, of which about one-third was taken in coastal waters. In addition, foreign fishing vessels landed fish valued at about £2,000,000 direct from the fishing grounds, and imports in either fresh or tinned etc. form were valued at about £46,000,000.

For Governmental purposes responsibility for the administration of the industry is taken in England and Wales by the Ministry of Agriculture, Fisheries and Food; in Scotland by the Scottish Home Department; and in Northern Ireland by the Ministry of Commerce. There is however extremely close liaison between these departments.

The fishing industry is not of equal importance to the economy of the countries. Of the total land area of the United Kingdom, England and Wales and Northern Ireland together comprise some 65%, and Scotland 35%. Scotland has only about 10% of the population but one-third of the total landings of fish comes to Scottish ports and approximately 40% of all fishermen employed in the United Kingdom live in Scotland. The sea fish industry is relatively more important to the economy, and therefore to the political and social life, of Scotland than it is to that of England and Wales and Northern Ireland.

THE WHITE FISH INDUSTRY

Economic Position in 1959

● Between 1st January and 30th September, 1959, landings of white fish in the United Kingdom amounted to 568,502 tons, a fall of 1.7% below those in the corresponding period of 1958.

Some details are set out below:

	Jan. 1st to Sept. 30th	
	1959 Tons	1958 Tons
Distant waters . . .	281,339	294,239
Near, middle and inshore waters *	287,163	283,812
	568,502	578,051

With the shorter supplies, prices in the first nine months of 1959 were slightly above those of the same months of 1958. The average value per stone (14 lbs.) of the total catch was 7s.10d. compared with 7s.8d.; that of the distant water catch 7s.3d. as against 7s.1d., and of the catch from other waters 8s.6d. as against 8c.3d.

Trend of Production and Values

● The movement over recent years in the quantity of fish landed by the various sections of the British fishing fleet and in the average landed values of the catch can most clearly and concisely be shown by the indices in an accompanying table. (These indices relate to 1951, the first full year after the ending of war-time control over prices and distribution).

Shell Fishery

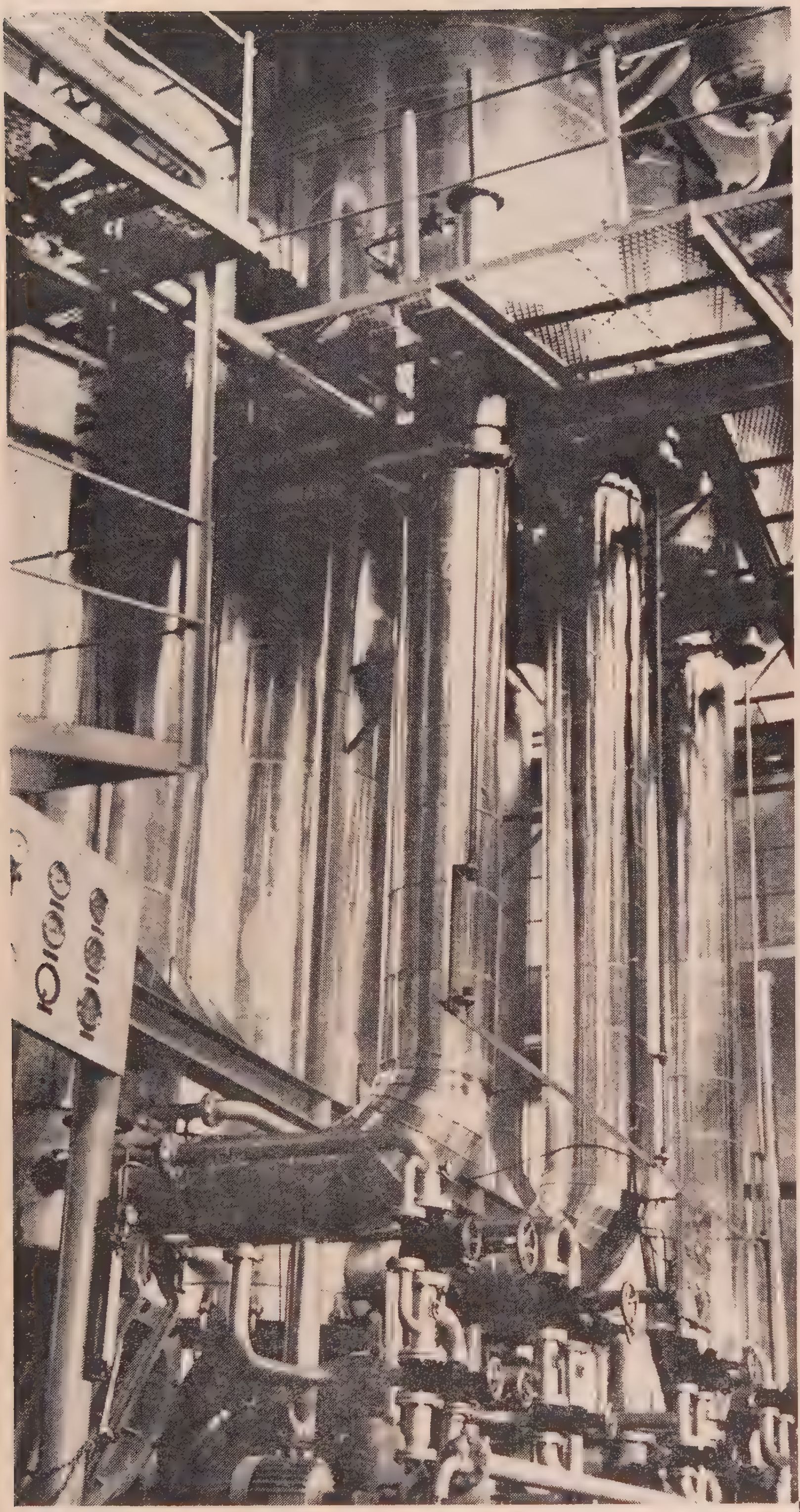
● This section of the inshore fishing industry has over the last few years experienced a steady upward trend, as the following figures show:

	Value of Shell Fish Landings
1954	£1,324,060
1955	£1,536,892
1956	£1,579,579
1957 . . .	£1,711,315
1958	£1,792,173

This increase of 36% is attributable only to a small extent to the general upward movement of prices, and is accounted for mainly by higher production. A considerable part of the rising catch is of Norway lobsters which, prepared as scampi, are becoming increasingly popular in British restaurants and homes.

The White Fish Authority

● In 1951 the White Fish Authority was set up by the Government with the task of "reorganizing, developing and regulating the White Fish Industry and of keeping generally under review matters relating to that industry." The Authority consists of a chairman and four members appointed by the Government, none of whom may have any financial or commercial interests



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in the white fish industry. The Authority is assisted in its work in Scotland by a Scottish Committee also appointed by the Government. There exists also a White Fish Industry Advisory Council drawn from different sections of the industry whose purpose it is to give advice to the Authority on the exercise and performance of its functions generally.

The Authority is empowered, with funds from Government sources, to make loans and grants to owners wishing to build new inshore, near and middle water vessels, i.e., vessels under 140′ in length. It also has power to make loans for the erection of processing plants, and grants for research and experimental work.

With funds derived from a levy on the landings of white fish the Authority promotes work study techniques and runs courses for newcomers to the industry as well as those designed to assist fishermen to obtain advancement.

Fleet Modernization

- Perhaps the most significant development has been the growth of diesel propulsion. In the distant water fleet, comprising some 250 trawlers, the big majority built since the war are driven by oil-fired steam, but in the last few years diesel or diesel-electric trawlers have made an appearance. The six vessels coming into service in 1959, and all the vessels now in construction or on order, are equipped with diesel or diesel-electric engines.

In the near and middle water trawler fleet, diesel propulsion has had a longer history, and in the main the change has been direct from coal-burners to diesels. Practically all the vessels built under the Grants and Loans Schemes administered by the White Fish Authority since 1953, of which about 190 will have come into service by the end of 1959, are diesels. The total strength of this fleet has declined considerably in recent years—from about 750 vessels at the beginning of 1953 to about 520 today—but the increased efficiency of the new vessels has maintained landings at levels slightly above those of 1953.

Modernization of the inshore fleet i.e. vessels under 70′ also has been stimulated by the Grants and Loans Schemes, and since 1953 over 550 new vessels have begun fishing, and nearly 400 other boats have been re-engined. There is a definite trend towards larger and more powerful vessels, which permit an extended area of operation and a better return for the fishing effort. Most marked has been the remarkable growth in the number of seine-net vessels, of which nearly 1,000 are operating today, and, generally speaking, are efficient both technically and economically.

Technical Developments, Vessels and Gear

- *Fairtry II*, the second of the *Fairtry* class of vessels, began fishing in the summer of 1959, and *Fairtry III* is expected to come into service by the end of the year. The first *Fairtry* when she began her career five years ago marked a revolutionary change in British distant-water operations. The *Fairtry* vessels are designed to stay at sea for three months or longer, compared with an average distant-water voyage of 21 days. They trawl over the stern, using a trawl fitted with twin cod ends, and the catch is filleted and quick-frozen at sea, with the offals and trash fish converted to fish meal. The *Fairtry* developments have been carried out by a private company.

WHITE FISH PRODUCTION AND AVERAGE LANDED VALUES

Years 1954 - 1958

	1951 = 100				
	1954	1955	1956	1957	1958
Weight of fish landed:					
British Distant waters	88	95	98	83	84
Near and middle waters...	98	102	96	102	104
Inshore waters	122	138	139	150	145
Total British	95	102	102	96	96
Foreign	44	50	50	65	58
All United Kingdom landings ...	88	94	94	92	91
Average landed values:					
British Distant waters	106	106	110	127	133
Near and middle waters	94	91	96	97	103
Inshore waters	96	87	98	99	101
Total British	100	98	103	112	118
Foreign	123	114	128	126	142
All United Kingdom landings ...	100	97	103	112	118

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A project more akin to traditional distant water policy is that of the part-freezing trawlers. It was announced earlier this year that a vessel of this type is to be built by a Hull trawling company. The idea of a part-freezing trawler stems from the experiments on freezing the early part of a distant water trawler's catch which were carried out in 1956 jointly by the Government, the distant water trawler owners and the White Fish Authority.

Stern-trawling is also being introduced into the near-water fleet. One trawler embodying a new design for this method of catching is about to undergo her trials, and a second is on order. Also under construction in a British yard is a fibre-glass trawler of 75′—the first fishing vessel to be built of this material, at any rate in the United Kingdom. She is expected to be ready in 1960.

New developments may be expected in trawling gear. At the present time the British Trawlers' Federation and the White Fish Authority are sponsoring a large research programme, with the help of a firm with the necessary research facilities. The object is to increase both the functional and the structural efficiency of the trawl and its gear. The program, which will not be completed for a considerable time, will conclude with trials on a commercial scale of such new gear as may be designed.

Developments on Shore

- The most significant trend in the marketing of fish in recent years has been the growth of quick-freezing. Production of quick-frozen white fish increased from 13,000 tons in 1953 to 43,000 tons in 1958, when it used over 11% of total landings. Over two-thirds of this production is in 'bulk' packs, which are sold at home to the wet and fried fish trades, to caterers and ships' chandlers, whilst a considerable proportion is exported, particularly under contract to the U.S.S.R. The remainder is in 'consumer' packs, which are distributed through the deep-freeze cabinets in retail shops. There are signs

UNITED KINGDOM

that production will continue to increase in 1959: in the first six months output of consumer packs rose to 10,000 tons against 7,000 tons in the corresponding period of 1958. The following table shows the progress made over recent years.

An offshoot of the growth of quick-freezing was the negotiation in the spring of 1959 of the first contract for the purchase of fish between the trawler owners and two large freezing companies. Normally, all fish landed at British ports is sold by auction. The contracts were of limited scope and duration, and whether similar arrangements will be renewed next spring remains to be seen.

On the technical side of distribution, the principal development is the project, sponsored by the White Fish Authority with the co-operation of other interests, for mechanizing the unloading and handling of fish at Grimsby. A start is about to be made on putting into effect a pilot scheme devised by a firm of production engineers, which is intended to achieve a considerable increase in the rate of unloading, sorting, weighing and laying out of fish.

Growth Trend in U.K. Quick-Frozen Fish Trade

	Fish Used	Percentage of total landings	Quick-frozen Fish produced	Imports	Sales:	
					Home Market	Overseas (a)
	tons	Per cent.	tons	tons	tons	tons
1954	54,612	6.8	25,929	1,638	17,320	8,008
1955	67,655	7.8	31,543	2,222	22,914	8,834
1956	78,309	9.0	36,629	3,154	32,527	7,567
1957	81,087	9.6	37,119	3,685	30,336	7,398
1958	94,037	11.3	42,747	5,169	35,131	12,030

(a) Includes sales to British Forces abroad and for ships' stores

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Ministry of Agriculture, Fisheries and Food, Scottish Home Department, St. Andrew's House, Edinburgh, 1—Fisheries Secretary, A. J. Aglen; Chief Inspector of Fisheries, C. Sim.

White Fish Authority, Lincoln's Inn Chambers, 2-3 Cursitor St., London, E. C. 4—Chief Executive, R. A. Forbes; Secretary-Solicitor, L. W. Jackson.

Herring Industry Board, 1 Glenfinlas St., Edinburgh, 1—General Manager, H. H. Goodwin, M.B.E., F.C.A.; Secretary, A. Fairley, F.C.I.S.

Association of Sea Fisheries Committees of England and Wales, County Hall, Truro, Cornwall, England—Hon. Secretary, E. T. Verger.

Producers

British Trawlers Federation, Ltd., Albert Gardens, Cleethorpe Road, Grimsby, Lincs.—Secretary, J. H. Ray, O.B.E., F.C.I.S., F.S.S.

Aberdeen Fishing Vessel Owners Association, 5 Albert Quay, Aberdeen—Secretary, R. S. Junor.

Federation of English and Welsh Inshore Fishermen, 1 Rock-a-Nore Road, Hastings, Sussex—Secretary, R. W. Wilson.

Firth of Forth Fishermen's Association, The Harbour, Port Seton, East Lothian—Secretary, N. C. Osborne.

Fisheries Organization Society, Ltd., 27-28 Denison House, 296 Vauxhall Bridge Road, London, S. W. 1—Secretary, W. J. Lord, M.B.E.

Grimsby Seiners' Association, Fish Dock Road, Grimsby—Secretary, S. Cuerton.

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Association of British Salted Fish Curers and Exporters, 47 Naylor St., Liverpool, 3—Secretary, John L. Fraser.

Food Manufacturers' Federation, Fish Curing Section, 4 Lygon Place, London, S. W. 1—Director and General Secretary, F. J. Lawton.

National Association of Frozen Food Producers, Fish and Fish Products Division, Fish Dock Road, Grimsby—Secretary, G. G. Cann, M.B.E., A.C.A.

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British Herring Trade Association, Ltd., 22 Belmont St., Aberdeen—Secretary, J. J. Donald.

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British Salmon and Halibut Importers Association, 110 Cannon St., London, E. C. 4—Secretary, H. Kingston, F.S.A.A.

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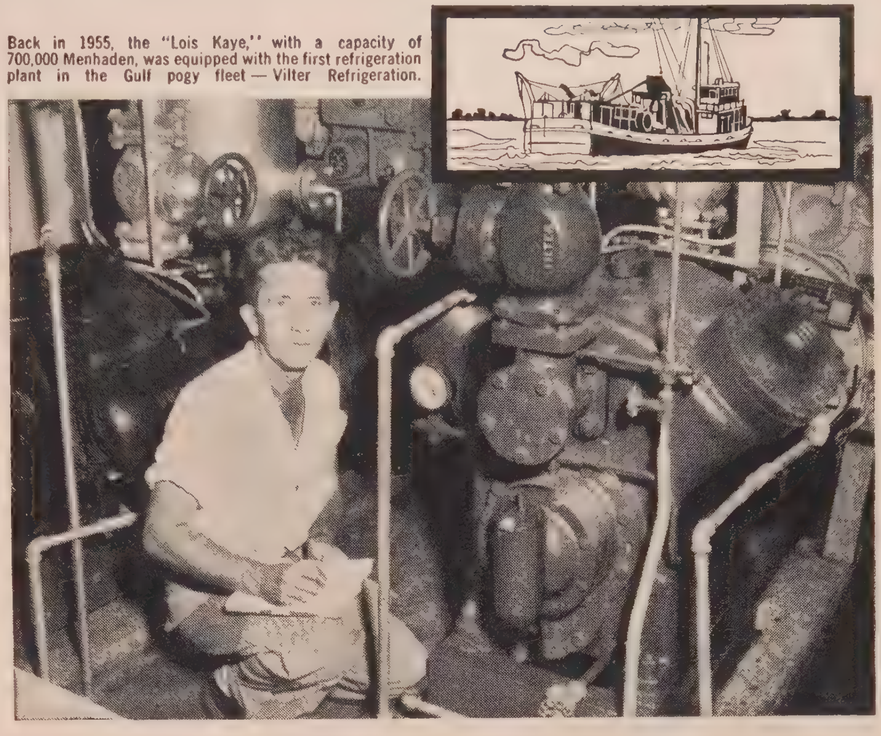

"The 'Lois Kaye' has been in service five years as a refrigerated Menhaden boat. And during those five years her Vilter VMC compressors have been working 24 hours a day on the fishing grounds," according to Dewey Bowen. "They have given excellent service. Very little maintenance has been required—as a matter of fact, we have replaced the rings only once in the whole five years!"

"Heart of the 'chilled brine' system aboard the 'Lois Kaye' is a pair of 95-ton Vilter VMC compressors," says Chief Engineer Dewey Bowen. "These units cool the seawater which is first pumped into the storage tanks when the boat arrives at the fishing grounds. Later, when the fish are pumped from seine to tank, the chilled brine is recirculated. By the time the Menhaden are brought to the processing dock they are being held at a constant temperature of approximately 37° F. This means, of course, that the fish are still firm and fresh. The refrigeration prevents loss in volume due to decomposition, makes processing much simpler, and yields a better quality meal and oil.

"Although this was the first refrigerated Menhaden boat in the Gulf, she is still considered the best," Chief Engineer Bowen concluded, "and her VILTER Compressors have been helping her to bring in fish of top quality for the past 5 years."

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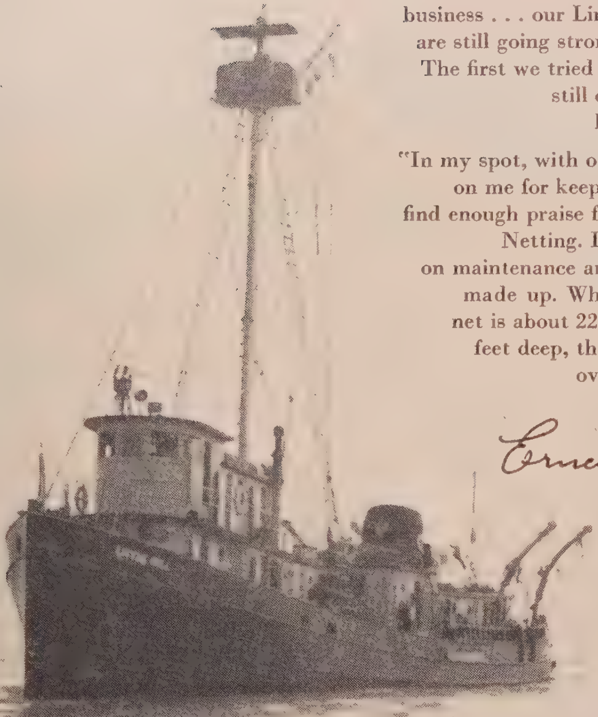
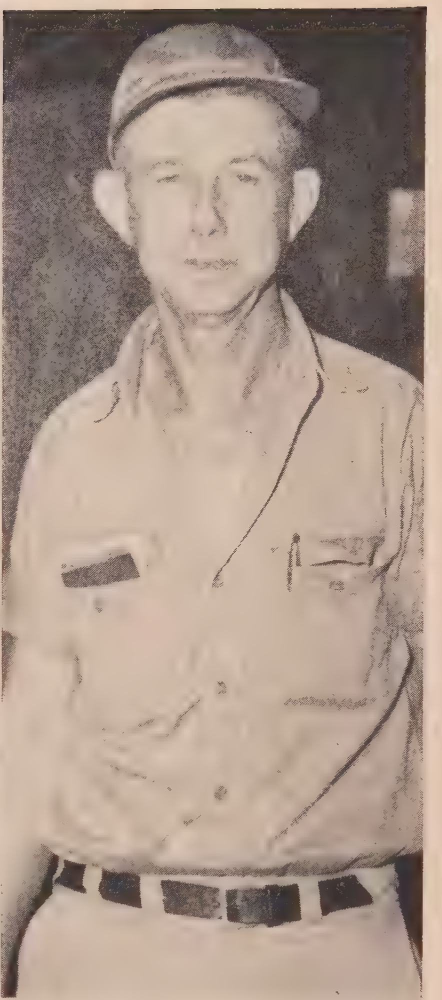
Ernest Fisher

Chief Net Man—
Fish Products Co.,
Lewes, Delaware
(pictured at right)



One of 27 big menhaden seiners in the Fish Products Company fleet at Lewes, Delaware.



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INDONESIA

By SOEPANTO KOESOEMOWINOTO

● Increased production of the sea fisheries of the Republic of Indonesia can be achieved by motorizing the fishing fleet, improving the techniques of fishing, providing the fishermen with credit facilities, and improving the marketing of the perishable product.

This paper seeks to review Indonesian accomplishments toward these ends, and particularly to discuss those aspects of the problems which are currently under attack.

Fishermen's Credit Supply

● Conforming to the aim of the government to strengthen the economic-financial position of the small farmers and fishermen, decisions and actions have been taken during the years 1956-1958 to extend the channels of credit. For this purpose a Farmers' and Fishermen's Bank has been brought into existence.

Credit, supplied to farmers and fishermen, must be channeled through autonomous local credit agencies upon recommendation of the local government. With the existence of these local credit agencies, the Farmers and Fishermen's Bank does not come in direct contact with individuals or organizations which need the necessary credit.

Another source of credit for fishermen is the Sea Fisheries Service, which distributes motorized vessels and twine to fishing industries as credit in the framework of rehabilitating fishing gear and mechanizing the fishing industries.

The distribution of twine for nets and the supply of credit to purchase fishing material and gear, have been channeled through the Federation of Indonesian Fisheries Cooperatives, as long as the fishing industries are members of fisheries cooperatives.

At the end of 1958 the Sea Fisheries Service had distributed motorized vessels on a hire-purchase system to: (a) fisheries cooperatives, 147 vessels, valued at Rp. 20,216,900; (b) organizations of war veterans, 48 vessels, valued at Rp. 6,469,950.

Mechanization of Fishing Industry

Through 1958, and dating back to 1955, there has been spent in Indonesia for mechanization of the fishing industry Rp. 94,169,600.

According to recent figures, the number of motorized vessels in 1958 was approximately 1,320, most of which are owned by fishermen's organizations. It is necessary to point out that mechanization of fishing industries has become popular among the fishery communities in Indonesia.

Extension of Auxiliary Facilities

● In the area of extension of shipyards and workshops a number of advances can be cited. Among them:

Establishment of a fishing harbor at Surabaja, East Java, under construction since 1952 and completed in 1958.

Shipyards and slipways for fishing stations at Djakarta, Ambon, Ternate and Belawan have been under construction for a number of years, and now approach completion.

Similar facilities at Tandjung Balai, North Sumatra, completed in 1958.

A fishery station is under development in Galala, Ambon, Moluccas, as are shipyard and slipway facilities at Gurapin, North Moluccas.

A shipyard and slipway project in Pulau Bayan, Central Sumatra, was expected to be finished by the end of 1959.

Fish Packing Plant Development

● Projects under this heading include the following:

An ice plant with 20 tons daily capacity, established at Tegal, Central Java, by the Sea Fisheries Service and equipped with refrigeration machinery valued at US$50,000 and obtained from ICA. Given the status of a government corporation, this plant has made substantial profits.

A pilot cannery was established at Ambon, Moluccas, in 1956 and equipped with machinery valued at US$20,000, obtained from ICA. This plant cans tuna, and was being expanded in 1959.

An ambitious project is that of Kotabaru, started in 1955/56 to expedite modernization of fishing activities in South Kalimantan, Borneo. It consists of a fish flour plant, cannery, ice plant, workshop and slipway, net loft, fish drying and fish salting plants, and a training center.

This pilot project was designed to create a modern fishing community which could be used as a prototype for the development of others. Although it was finished in 1958, the project has encountered a number of obstacles, principally lack of equipment.

NOTE — Mr. Soepanto Koesoemowinoto is chief, Technical General Division and Foreign Relations, Sea Fisheries Service, Republic of Indonesia.

NOTE—Indonesian monetary unit referred to in this article and statistical table is the Rupiah, with a value of .0392 to the U. S. $.

INDONESIA'S TRADE IN FISHERY PRODUCTS

	1956		1957		1958	
	Tons	Rp. 1000	Tons	Rp. 1000	Tons	Rp. 1000
Interinsular transportation of fish and other sea products	76,992	233,361	77,999	258,392	74,776	288,631
Export of fish and other sea products	7,050	21,825	6,317	18,497	4,445	11,410
Import of fish and other sea products	35,095	84,784	28,996	69,194	17,632	32,867

Experiments in fish canning have been under way since 1957, with satisfactory results. To provide raw material, the plant is served by nine fishing vessels, one shrimp trawler, and five carrier boats.

Total amount going into the plant to the end of 1958 was Rp. 17,614,000, of which Rp. 13,701,000 was capital investment and Rp. 3,913,000 operating funds.

Operation of the project is supervised by foreign experts provided by ICA.

Indonesian Fisheries Research

● Scientific and technical research projects of Indonesia have been handicapped for lack of funds and facilities, notably a laboratory and research vessel, but include:

a) *Biology*—Research on species of fish, several kinds of fisheries, plankton; research on exploratory fishing; research on pearlculture. b) *Fishing technique* — Research on long-line-, shrimp trawl-, otoshiami-, muroami-, pearl-, lompara-fishing, trolling, etc. c) *Technology*—Canning experiments and artificial drying of fish. d) *Other researches* — Among others, research on the efficiency of vessels and engines, oceanography, and socio-economics.

Fishermen's Organization

● Due to their pre-occupation with production and the sea, Indonesian fishermen generally have not handled the marketing of their products themselves and have been compelled to pass this business to their customers without taking into consideration whether the prices they realized were reasonable or not.

This unfavorable situation can be overcome partly by making joint efforts in the form of cooperatives. It is obvious that a cooperative is the most suitable type of organization for the fishermen, due to the fact that basically fishing is a joint effort itself in Indonesia. Moreover, fishery cooperatives will be able to assimilate the technical developments for the sake of their members, by way of rationalization and modernization.

Through the establishments of fishery cooperatives it is strongly hoped that the fishermen will be gradually able to decide what must be actually done with their own products. This can be achieved by way of:

(1) setting up fish auctions in the first place;

(2) setting up central places for fish salting and efforts of selling the product jointly;

(3) marketing the fish directly to the consumers.

Success has already been achieved in the setting up of fish auctions, which are mostly found along the coast of the island of Java.

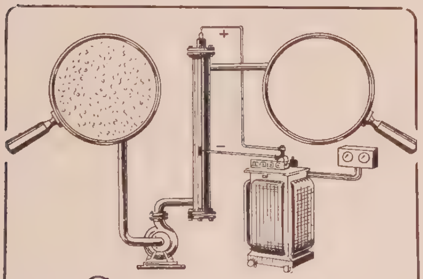
Directory, Indonesia Fishery Organizations

Directorate of Fisheries — Ministry of Agriculture, Djalan Gadjahmada 8, Djakarta, Indonesia — Chief, R. Pranjoto.

Sea Fisheries Service—Ministry of Agriculture, Djalan Kerapu 12, Djakarta-Kota, Indonesia — Chief, R. A. Kartono; Division Chiefs, M. Soeparso Malangjoedo, Central Institute; R. Soenarto, Fishing Technique Research; J. R. Pattina-Sarany, Technological Research; R. Soediro Mangoendjojo, Motorization and Mechanization; Soewarno Joga-Wisastro, Credit and Fishermen's Organizations; F. W. Wawaroentoe, Marketing; B. B. Lokollo, Engines and Boat Construction; R. Soeroto, Education; V. Soesanto, Marine Resources Research; R. Koostedjo, Statistical; R. Mochamad Iskandar, Legal; R. M. Soepanto Koesoemowinoto, General Technical and Foreign Relations.

Farmers and Fishermen's Bank, Djalan Nusantara 18, Djakarta, Indonesia — Managing Director, G. M. Charidjie.

Federation of Indonesian Fisheries Cooperatives, Djalan Lodan 143, Djakarta, Indonesia — Chairman, R. Ediwan.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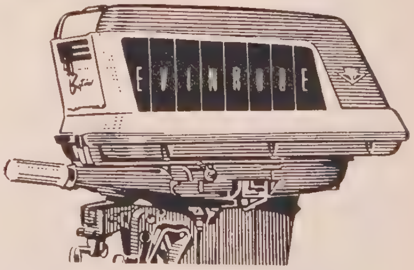


U. S. S. R.

● U.S.S.R. fisheries expansion, already challenging the United States for second place among world producers, unquestionably is aiming at tuna as affording an opportunity as yet virtually untouched by Soviet fishermen, with attractive possibilities for export as well as domestic production.

While the Soviet Union's program for its fisheries contemplates growth in any field with promise, there can be little question but that the world's tunas are being looked upon as a particularly attractive resource.

Thus in 1959 A. V. Mikheev, a member of the Fisheries Division of the U.S.S.R. State Planning Authority declared that in order to create the broad range of fishery products called for by the present U.S.S.R. 7-year plan, commercial exploitation of such species as tuna, sardines, and saury or mackerel pike must be developed as soon as possible. Sardine fishing by Soviet vessels in the tropical Atlantic and saury fishing in the Pacific are already on a commercial basis, but he said that much work remains to be done on tuna fishing.

The present 7-year plan calls for an annual tuna catch of 22.0 million pounds by 1965. To attain this production, it is planned to build a number of specialized tuna boats to be based in the Far East for year-round tuna fishing in the Pacific, and a larger number of combination tunaboat-trawlers to be based in Baltic and Black Sea ports for seasonal tuna fishing in the tropical Atlantic.

Mr. Mikheev concludes that the U.S.S.R. fishing industry should concentrate first on the development of long-lining and seining, as techniques in which Soviet fishermen are more experienced. Pole-and-line fishing, because of the specialized skill which it requires and because of the difficulties associated with the use of live-bait, should be left for development at a later stage.

Large-scale programs of exploratory and experimental fishing have been set up this year by the Kaliningrad Sovnarkhoz for the tropical Atlantic and by the Primorsk Sovnarkhoz for the Pacific.

Soviet Russia has not temporized in putting its tuna fishery development program into operation, for it is known that at least one Soviet vessel was long-lining tuna in 1959 in the vicinity of the Caroline Islands in the western Pacific.

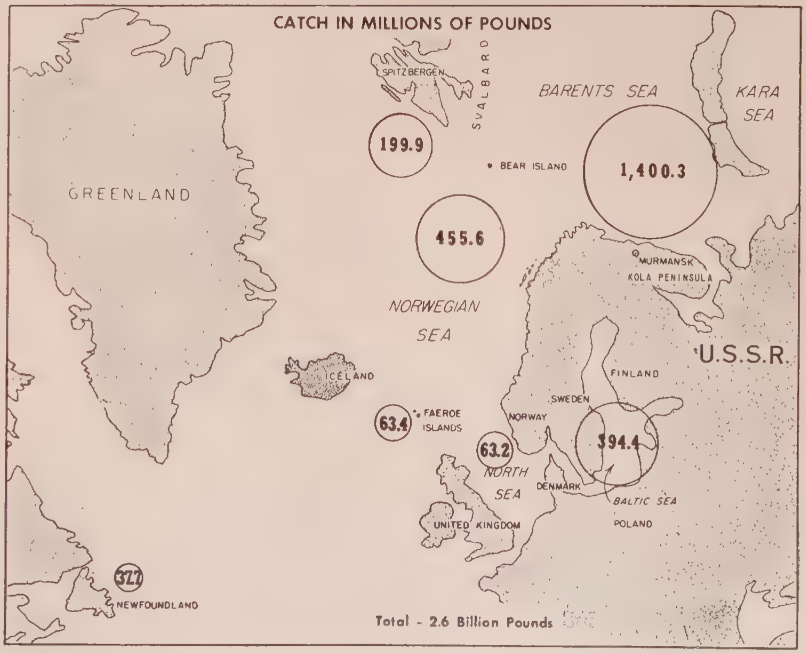
● Latest available information indicated that the Far Eastern region of the Soviet fishery stands in second place among the Soviet Union's four fishery regions, with 23% of the total, about half that of the Northwestern region.

Far Eastern operations are known to have fallen short of expectations in recent years, due to the Japanese high seas fishing for salmon, Soviet sources say.

While efforts to sustain the salmon fishery of the western Pacific proved unavailing in 1959, the U.S.S.R. in that year launched a spectacular enterprise which sent a large and capable fleet of factory ships and trawlers into eastern Bering Sea where they fished international waters off the coast of Alaska.

This fleet is believed to have main-

U.S.S.R. Fish Landings, Atlantic—Arctic—Baltic Area

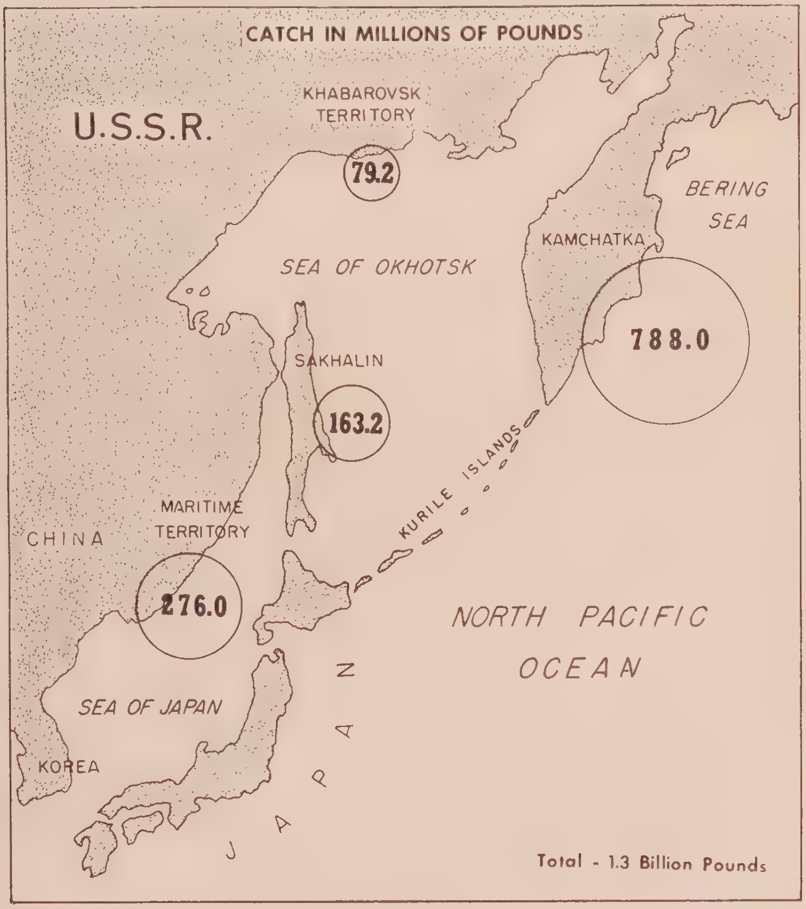


U.S.S.R.

tained operations in this formidable region during at least eight months of that year.

While these operations probably could not compensate in point of value for the decline of the salmon resource, tonnage produced is believed to have been very large indeed.

U.S.S.R. Marine Fish and Shellfish Landings in the Far East



Data are the latest available, but obviously do not include the 1959 catch in Eastern Bering Sea.

- The great strides made by the Soviet fisheries have been largely through the development of a productive modern fishing fleet. Trawlers, seiners, and factory ships of large capacity have been built. Some of the trawlers are over 200 feet in length, with a capacity of about 500 metric tons (1,100,000 pounds) of fish. The factory-ship fleets can remain at sea for long periods, thereby reducing the amount of uneconomic traveling time to and from the fishing grounds. Recent five-year plans have stressed expansion and mechanization of the fleet, with the introduction of such modern features as stern-trawling equipment, freezers, and echo sounders.

In 1958, the Soviets reportedly planned an additional 125 large trawlers and 16 factory-trawlers equipped to freeze fish and to produce fishmeal.

In the Far East, stern-operated trawls have been developed for use on multiple-purpose vessels, also used as purse seiners. This additional gear promotes year-round production from the seiners that operate off the western coast of Kamchatka and the northern Kuriles. The small 23-meter trawls are worked on soft ground in shallow (3 to 5 fathoms) waters.

Part of the success of Soviet high-seas fishing is attributable to the widespread use of exploratory or scouting vessels and aircraft. Many vessels are used for spotting fish in the Far Eastern waters, but the Russian industry has reported the number is inadequate. More craft were needed to avoid time-consuming searches by the fleet for fish schools. Migrating fish are also located and tracked by low-flying helicopters trailing echo-sounding devices. The air-borne equipment is faster and is considered more accurate than ship-based echo-sounding or ranging instruments, which are affected by the vessel's movements, especially in rough seas.

- Expansion of activities of the Soviet Union in the tropical tuna fisheries is forecast in well informed quarters, and not denied either in Moscow or Vladivostok. The Japanese have reported the presence of at least one Soviet fishing vessel apparently longlining for tuna in the waters to the east of New Zealand; and Soviet missions to Japan have shown marked interest in the tuna industry there.

Presumption is that the Soviet fishery would be designed in large degree to supply the domestic market, as the areas in which the Soviet Union sells most of its export fishery products are not now considered well-developed markets for canned tuna.

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SOUTH WEST AFRICA

By I. J. KEUN

• Growth of the fishing industry in South West Africa during the last 10 years has been phenomenal. In 1948 the value of products was approximately £400,000. The peak of nearly £10,000,000 reached in 1958 is expected to be eclipsed in 1959, when the data are all compiled.

Activities are concentrated at two places, Luderitz and Walvis Bay. At the former the rock lobster industry has its base, while the latter is the point of concentration of pilchard and maasbanker processing. Walvis Bay is also the headquarters of the fresh, frozen, salted and dried fish trades.

Six modern and highly mechanized factories at Luderitz are licensed to process rock lobster exclusively. They produce canned fish, frozen tails and fish meal. Raw material resources are conserved by a limit on production imposed by export quotas and a minimum size of fish permitted to be caught.

The pilchard and massbanker (Jack mackerel) industry at Walvis Bay is likewise served by six up-to-date establishments mechanized to the best modern standards and operated under license from the government. A ceiling of 260,000 tons per annum on the harvest from the sea, which is divided amongst the six factories, protects the resource.

Two more undertakings handle only fresh, salted and frozen fish and one has commenced drying of shark and other types.

• Originally the bulk of the output of the rock lobster industry was in canned form, but the emphasis has shifted to frozen tails. Considerable consumer demand, which actually exceeds supply, for this product has been built up in the United States of America and, to a lesser extent, in France and the United Kingdom. A steady increase in prices, without any adverse effect upon consumption, has resulted and the field of marketing is steadily broadening. A number of European and other countries which have not previously purchased frozen tails are now eagerly seeking a share of the available supplies. The future of the rock lobster industry, therefore, seems to be assured.

The method of packing, handling and distributing products has been evolved to suit the best needs of the industry and consumers. Stability in processing and marketing has been achieved and no new developments of consequence are expected. The value of products remains steady at approximately £1,000,000 per year.

Technological research is not at present pursued on any appreciable scale, the main problems having been

Rock Lobster meat being weighed before packing in cans in a South West Africa canning factory.

NOTE — Mr. Kuen is head of the Fisheries Section, South West Africa Administration.

Lobster Meat being picked from the cooked tails in a rock lobster cannery

overcome. Specific research is, however, done from time to time as particular circumstances dictate.

- The economy of the pilchard/maasbanker industry is buoyant, due mainly to the ready availability of raw material and the consistent demand for products.

The industry is established on sound, progressive lines and is in the singularly fortunate position of enjoying stable fishing conditions. Processing can be concentrated during the times when the fish is in the most suitable condition thus ensuring general operational efficiency and maximum economy in raw material utilization. By operating to fixed quotas of raw fish processors achieve stability in production programmes.

- A significant trend in recent years has been the increasing output of canned fish. To avoid overproduction, however, it has been deemed advisable to limit this to the estimated overall off-take in established markets. The proportion of the catch that passes through canneries and/or fish meal reduction plants is, therefore, directly related to the demand for canned fish.

To give some indication of this development, the following production figures for the calendar years 1957, 1958 and 1959 are given:—

Fish Meal: 1957 — 86,979 Short tons; 1958—102,579 Short tons; 1959 (end August)—116,834 Short tons.

Fish Oil: 1957—19,973 Short tons; 1958—24,120 Short tons; 1959 (end August)—28,068 Short tons.

Canned Fish: 1957 — 3,095,973 Lbs.; 1958 — 3,896,176 Lbs.; 1959 (end August)—2,593,204 Lbs.

- Where the supply of raw material is dependent upon unknown factors such as fish availability, it is difficult to forecast future prospects. It can confidently be expected, however, that, with realistic application of measures aimed at conservation and sound, co-ordinated marketing, the industry can, subject to periodic minor fluctuations, look forward to continued optimum activity.

With the limitation on availability of raw fish, improvement in technology has become of major importance in its utilization. In this field the industry is well served by its technical staff and the Fishing Industry Research Institute. Research is conducted by the Institute in directions suggested by the industry. This ensures an objective and concerted approach to the improvement of techniques and the solution of problems.

No difficulty is experienced in disposing of fish meal and oil but in the field of canned products competition is strong.

Sales of canned fish are negotiated by individual manufacturers but the marketing of fish meal and fish oil is done in conjunction with South African producers.

This system of co-ordinated marketing of meal and oil has proved its worth as a means of ensuring rational distribution with the attendant financial benefits.

Control of the industry is entrusted to a special section of the South West Africa Administration under the chargeship of Mr. I. J. Keun, Government Buildings, Windhoek. Mr. J. P. Matthews is the senior biologist stationed at Walvis Bay where a fully equipped research laboratory is operated. A similar laboratory functions at Luderitz and four modern ships are engaged in biological research at sea.

Liason between the industry and the Government is provided by advisory committees consisting of factory managers at Luderitz and Walvis Bay.

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IRAN

• With shrimp subject to an almost insatiable demand in the United States —and growing consumer interest elsewhere—nations so fortunate as to have underdeveloped shrimp resources find in them economic assets which can be converted into international credits with relatively little investment and a minimum of risk.

Iran is one of the nations whose shrimp resources are being brought into development.

Moreover, the entire export trade with the United States in Iranian shrimp has come recently, for prior to 1959 it does not appear that there were any significent commercial imports.

With three-quarters of 1959 gone, Iran stood in 11th place among the nations in shrimp shipped to the United States. Not high rank, no; but it had been attained in only a few months, a minor part of the nine elapsed; and the rate of shipment at the end of the period was outstripping that of some older sources.

• Beginning of industrial shrimp production in Iran necessarily had to wait upon provision for adequate refrigeration facilities, as the area about the Persian Gulf, where much of the shrimping is done, is among the hottest in the world.

Moreover, there was a general lack of suitable vessels to supply the freezers, and these had to be imported.

Important expansion of the Iranian shrimp operations came about late in May, 1959.

The Iranian company before the expansion operated two catcher boats, one mothership, and a 300-ton cold-storage warehouse in Khorramshahr, shipping 40 to 60 metric tons of shrimp a month to the United States. A New York City importing firm has sole importing rights in the United States for the shrimp shipped by the Iranian company.

The expansion includes the addition of seven trawlers and one mothership to the Iranian company's fleet. The trawlers are 65 footers, having a displacement of 50 tons, and are equipped with Diesel engines. The mothership is 1,000 tons gross registry and is equipped for freezing and processing, and was to go into service in the fall.

The trawlers were previously used in Panamanian waters. They are under Panamanian registry and will continue to fly the flag of Panama, at least for a year. The mothership, the *Mayon I*, is associated with the New York City importing firm.

In addition to co-managership, the New York City importing firm will secure exclusive rights to the sale of the Iranian company's production except in Iran and Kuwait.

• The expanded operation encountered rather adverse conditions soon after the trawlers arrived, as shrimp fishing operations in the Persian Gulf had virtually come to a halt at the end of June. The shrimp fishing company in Iran had been hopeful of operating year-round, but the June trips of the trawlers, which covered the Iranian coast from Jask to the mouth of the Shatt-Al-Arab, produced less than a ton of shrimp.

The United States fishermen operating the boats are convinced that the season lasts from October through April.

• By October the joint Iranian-United States shrimp fishing company had 10 shrimp vessels operating Abbas area, and the local agent reported the catch large. The shrimp were frozen and packed for shipment to the United States on board one of the larger vessels at Bandar Abbas. The shrimp vessels are provisioned from Khorramshahr by a small chartered coastal freighter.

A joint Japanese-Iranian company was set up about four years ago first with private Iranian capital. The Japanese did not work well with the Iranians and withdrew their boats about a year and a half ago. Since that time the company has continued limited operations.

• While shrimp provides the most immediately attractive and promising marine fishery from Iran, that country has a valuable fishery resource in the sturgeon of the Caspian Sea, and for the caviar derived from them.

In recent years Iranian sturgeon have played an important part in the United States cured fish business, the frozen sturgeon from Iran having displaced to a considerable degree domestic Columbia River goods on the New York market for smoking.

In 1959, for the first time since 1956, the National Iranian Fisheries Co. opened bids for the Caspian sturgeon and caviar production. In 1956 the contracts for a 3-year period had been won by an American and a French firm.

• The American firm again in 1959 won a three-year contract, and thus has long leadership in supplies of Caspian sturgeon and caviar, which may be marketed in any territory except Europe and the U.S.S.R. Forty metric tons of caviar are to be delivered in the first year, 50 tons the second, and 60 tons the third.

A notable aspect of the contract is the large quantity of sturgeon, 250 metric tons, to be taken annually. Only

50 tons were hitherto taken by the United States.

The Soviet contract, signed July 11, 1959, is for one year only. It calls for 46 metric tons of caviar at prices understood to be higher than last year's by 25% for first grade types and 20% for second grade types. Of this caviar, 33 tons to be delivered in the third quarter of 1959. In addition, the Soviets agreed to take 600 tons of sturgeon at a price of US$320 per ton (less 10% for second grade) as compared with US$340 per ton last year.

BRAZIL

● Brazil's enormous coastline, running through 40 degrees of latitude and 20 degrees of longitude and embracing the tropics and southern sub-tropics, holds obvious potential for industrial fishing of the first magnitude.

Current developments there have already produced notable progress, and have confirmed a potential whose significance can hardly be overestimated.

Shrimp and tuna, two species with almost magic ability to expand markets faster than supplies can be increased, appear at present to bear the greatest promise for the near future.

There are, however, other resources which are being brought under development. These include whaling and bottomfish populations amenable to exploitation by trawling.

● Only in recent years has Brazil moved from its traditional position as an importer of fishery products to that of exporter, a status which the nation will not soon relinquish.

Although full data were not available at time of writing, the 1959 fishery production and export program of the Brazilian government contemplated export of tuna alone to the volume of 15,000 tons and a value of US $9 million.

This considerable trade has developed from nothing whatever in about three years.

Beginning in 1958, the Brazilian trade in shrimp — both canned and frozen—shot upward with vigor, and continues to grow at a remarkable rate.

The trade in spiny lobster tails for export to the United States market also shows unmistakable signs of growth which is expected to be long sustained.

● The fishing fleets which operate along various sections of Brazil's coast have increased their catches to such large proportions that in only two years, fishery production of the Rio Grande de Sur area has increased 1,000%.

The Brazilian Government has established a program to increase fishery production, and subsequently fishery products exports. The revenue from more exports will in turn further increase production. This increase in production is based on the use of modern fishing vessels manned by well-trained technicians, and continuing studies of Brazil's marine fauna.

Brazilian fishermen are presently being instructed in the use of modern fishing equipment by Japanese technicians from the five Japanese fishing companies now operating in Brazil. The contracts signed between the Japanese companies and the Brazilian Government stipulate that the Japanese must register their fishing vessels in Brazil after two years and that subordinate officers and two-thirds of the crews of the fishing vessels must be Brazilian.

● Whaling bears promise of real importance in Brazil's utilization of its marine resources.

In the 1958 season the catch was 125 whales, but the government's program for the 1959 season contemplated 500 whales.

Before the end of 1959 Taiyo Gyogyo K.K., a Japanese leader in this field, and generally regarded as the largest fishing company in the world, was a modern whale factory station under construction at Cabo Frio, some 60 miles east of Rio de Janeiro. This plant is expected to be in operation by the end of March, 1960, and will be served by two "killers" belonging to Brazil Taiyo Co., a Brazilian corporation in which Taiyo participated with domestic capital.

● From the point of view of tonnage, waters of southern Brazil bear enormous quantities of hake, specifically *Merluccius merluccius hubbsi.* In this they share abundance with the neighboring seas off Argentina, as well as those of Chile on the west coast of South America—although the hake of this latter area are of a slightly different species.

In addition to the hake, other "school fish" species include Sardinella, used widely throughout the world for sardine canning or for reduction to fish meal and oil.

● Although the growth in Brazilian fish exports has been notable, much of the recent growth in fish utilization has been based on the domestic market and its avid demand for tuna and such pelagic species.

An important part of this domestic fish supplying business is based on Santos, from where a Japanese-Brazilian company operates a fleet of modern trawlers which produce both bottomfish and shrimp.

Refrigeration for these catches is provided at Santos, from where they are shipped to market primarily in Sao Paulo.

CANADA
Atlantic

- Canada's Atlantic coast fisheries are beset by many problems, and one of the most serious is the encroachment of fishermen of other nations in areas traditionally regarded as primarily Canadian.

Fleets representing more than 20 countries have been operating during the past season off the banks adjacent to Newfoundland, and depletion is a continuing threat. Scores of vessels in that area fly the flags of Portugal, France and Spain. The latest entry is Greece, which is reported preparing an expedition with modern trawlers.

For the first time, German trawlers were operating off the coast of Labrador last season, and the West German Deepsea Fisheries of Bremerhaven appropriated $115,000 to cover several exploration trips by commercial trawlers. Operators will be guaranteed gross daily receipts of $1,200, to be offset by receipts from their sale of fish taken during the exploratory trips. Three such trips were made during the past season in waters off the coast of Newfoundland, Labrador and southwest Greenland.

Newfoundland fishermen have complained that, partly as a result of such incursions, their trawlers have often been obliged to return to port with only half loads. They claim that many of the foreign craft have been experimenting with new equipment reaching extreme depths, whereas in the past most of the fishing has been confined to relatively shallow waters.

Some of the world's great fisheries are within a few miles of Newfoundland, and new redfish grounds, discovered by the staff of the Canadian Fisheries Research Board's station at St. Johns, are strung along an extensive area. Total catch of redfish in the entire ICNAF area in 1958 was 315,000 tons, of which the newly exploited grounds contributed more than 200,000 tons. The major operation in this area was Russian, with landings exceeding 100,000 tons. Icelanders took another 81,000 tons.

Other Maritime Problems

- Competition from fishermen of other countries, however, is only one of several factors that have caused anxiety along Canada's east coast and suggested means of remedial action. Some of them were recently emphasized by C. J. Morrow, of Lunenburg Sea Products, a former president of the Fisheries Council of Canada:

1. The industry is facing a serious situation brought about by the increased cost of fishing vessels due to the requirements of more modern equipment, as well as because of higher costs of labor and materials.

2. The industry, from a marketing standpoint, is dependent on a continuous flow of raw products the year round, which is not possible to obtain solely from the inshore fishery.

3. Increased intensity of fishing is adding materially to costs due to a steadily decreasing volume of catch per boat.

4. The Atlantic coast fishing industry needs government assistance in some form which would enable it to build up the fishing fleet so it can compete effectively with the foreign fleets. Present assistance is based on costs of some ten years ago and it applies particularly to the smaller type of craft (A large trawler, for instance, costs to maintain, with crew, plant workers, etc., about $400,000 a year).

5. The premium on the Canadian dollar has been detrimental, inasmuch as the industry sell two-thirds of its production in foreign markets, particularly to the U.S.

New Boat Types Studied

- The Federal - Provincial Atlantic Fisheries Committee has been recommending preliminary action for the design of new inshore and offshore vessels incorporating studies into the relative costs and efficiency of various types of metal and wooden hulls.

Emphasis is also being placed on experimentation with different types of catching gear, including equipment used in other parts of Canada as well as that used in other countries. Much development work has already gone into this project and some excellent results have been obtained such as in the case of the Danish seining technique which has been successfully adapted and is now spreading in the maritimes.

Particular reference is being made to the trend on the part of fishermen to increase the power of their boats. The committee has endorsed continuation of the economic studies by the Canadian department of fisheries on the operation of modern longliners and draggers and agreed that it should be expanded to include new multi-purpose vessels and deepsea trawlers.

Federal and provincial governments have assisted the industry financially

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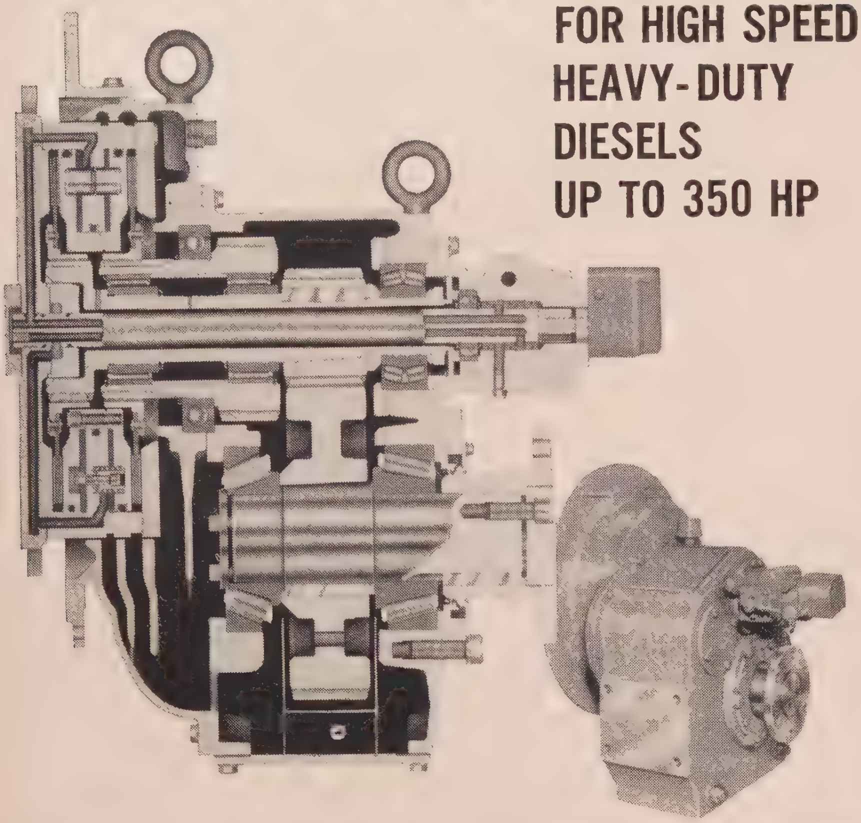

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on a fairly substantial scale. For instance, millions have been invested in plants and draggers for Newfoundland, the province itself advancing $10,000,000 between 1949 and 1957. In the decade following 1949, government funds have financed acquisition of 22 draggers and five trading vessels for Newfoundland alone, and this year some 20 fresh fish plants will operate there, a big new plant at LaScie entering production this year. Some investments by the government have not been particularly rewarding, however. For instance, Booth Fisheries Corporation of Canada bought for some $50,000 a plant built in 1952 by Newfoundland Fisheries Development Co., backed by provincial bonds, at a cost of $2,000,000; but the new owners plan to employ 200 and operate on a larger and certainly more financially successful basis.

Profitable Market is Elusive

• In Newfoundland as well as in some of the other Atlantic provinces the problem has not been so much to find markets as to get a more economic price for the product of the fisheries. The salt cod industry is declining, although the fresh frozen trade has advanced, and superior processing and packaging have been partly responsible. Considerable success has been achieved in developing new products. Salting plants, determined to restore their position in the market, have been experimenting with new product forms, one plant putting up salted fish blocks, another packaging salted fish in plastic containers. Scientists at Halifax have finished successful experiments with cod and haddock as a source of high-protein fish flour and have started exploring the abundant stocks of herring and alewives as the raw material for a newer type of fish flour.

NAFEL (Newfoundland Associated Fish Exporters Ltd.) has lost its license to export salt fish, and exporting has become competitive, in line with the practice elsewhere in the Canadian industry. Just how the change will affect fishermen is hard to estimate. NAFEL was created in 1947 with a view to stabilizing marketing and eliminating price cutting. In its first ten years NAFEL sold 7,500,000 cwt. of fish, valued at $118,000,000.

Research aimed at conservation and effective management of the industry has been more extensive on the Atlantic coast in recent years. A three-year project designed to restore the seriously depleted oyster beds in the waters of New Brunswick and Nova Scotia has been highly successful. The operation has involved the transfer of

10,000 barrels of Prince Edward Island oysters to the devastated mainland beds.

Depletion was caused by a disease, harmless to humans, which swept Prince Edward Island in two epidemics, the first one in 1915-20 and the second in 1935-40. Oysters which survived were immune, and this strain has been used to rehabilitate the exhausted mainland stocks. What threatened to be a crisis for maritime fishermen has been averted. Normal production is about 30,000 barrels, but this had slumped in 1958 to only 4,500 barrels.

Lobster Canning Dwindles

• Newfoundland's lobster industry has changed appreciably in recent years, very little of the canned product being processed. Most lobsters are now sold live in the U.S. market. Markets are widening for Canadian lobster and today New Brunswick is flying shipments across the ocean to Europe, particularly to Brussels. New packaging techniques are expected to lead to further sales expansion.

Maritime lobstermen have been averaging more than $12,000,000 a year for their catch. Retailed—live, canned, fresh cooked as lobster paste or in cold pack—the value of the product can easly be doubled.

Lobster poaching in Canada's Atlantic waters has become big business and a critical problem for enforcement agencies. The traffic bears some resemblance to the rum-running of a generation ago. During a recent nine-month period, fisheries officers seized and destroyed 15,000 illegal traps in New Brunswick and Prince Edward Island alone. It's impossible to make a close guess as to how many lobsters come out of the sea each year in the Maritimes. Enforcement of conservation measures has been exceedingly difficult and many seizures of equipment have been accompanied by violence. Dr. A. I. Pritchard, chief conservation officer for the Department of Fisheries, Ottawa, estimates that in one out of every 10 attempts at enforcement officers may be faced with violence. Royal Canadian Mounted Police were recently called out when a fisheries patrol vessel was set afire near Pugwash, N.S.

Boat Construction Active

• Construction of fishboats along Canada's Atlantic coast has been more active than ever, and this is due to the increasing intensity of the fishing effort. More than 26,000 fishermen harvesting an annual catch worth about $35,000,000 in landed value represent a worth-while market for the builders.

Not including the thousands of small boats engaged in the lobster fishery and other types of inshore fishing, there are more than 500 trawlers, draggers, longliners, dory schooners and swordfishing boats operating out of maritime ports, Nova Scotia, with a dragger fleet of more than 160 vessels, heading the list. New Brunswick has about 100 draggers in operation, all using otter trawl nets, although some are equipped for other types of gear. The only trawler fleet in the maritime provinces operates out of the main ports of Nova Scotia; in 1958 the vessels ranged in length from 153 feet to 103 feet and varying in tonnage from 399 tons to 132 tons. Nova Scotia's longline fleet numbered more than 85 vessels.

Of the once-mighty fleet of schooners sailing out of Nova Scotia fishing ports to the banks, only eight schooners are left and most of them sail out of Riverport. Most of the purse seiners (about 14) fish herring in the Bay of Fundy. Yarmouth is the major swordfish port.

Canada's Atlantic coast fisheries are now confronted with a climatic revolution that may have a pronounced effect on abundance of certain species. Thomas G. Chiasson, of the research station at Fredericton, N.B., reports, for instance, that during the past 15 years a definite and somewhat drastic change in the climatic pattern of the area has been taking place, and there has been evidence of more tropical fish moving northward. A 10-foot white shark attacked a fishing boat last summer at the mouth of the Bay of Fundy, and was later caught. A 1,200 lb. shark was hooked near Penobscot Bay, N.S.

Another authority, Dr. E. R. Yarham, claims that Atlantic cod have moved their range 700 miles north in recent years. In the ocean off the Atlantic provinces, such tropical fish as pilot fish, scup, horseshoe crabs and giant sea turtles, previously unknown in such latitudes, have been found.

Important new revelations in this field are expected to result from the operations of the new oceanographic institute to be built at Bedford Basin, N.S., which will co-ordinate research with the Fisheries station at St. Andrews.

• Maritime Provinces of Canada are making long strides toward the objective of a modernized fishing fleet, and one designed and equipped specifically for the present day techniques in fishing.

Nova Scotia tops the list in all classes of fishing vessels. At last count there were 163 draggers in the Nova Scotia fleet, against 99 for New Brunswick and 13 for Prince Edward Island. Draggers are roughly counted to be under 100′ in length and craft which are primarily engaged in trawling, although they may on occasion engage in fishing other forms of gear.

The only large trawler fleet in the Maritimes is that fishing out of Nova Scotia, where there are more than three dozen vessels ranging from 103′ to 153′.

Long-line fishing occupies 145 Nova Scotia craft ranging up to 150 tons, although the great majority are much smaller.

There are only eight dory schooners reported still active in the Nova Scotia ports.

Herring fishing in the Bay of Fundy is carried on by a fleet of off-shore seiners served by about a dozen carriers.

Eastern Canada Directory Of Fishery Organizations

Fish Distributors Association of Ontario, 257 Fleet St., E., Toronto, Ontario—Secretary, R. E. Matthews.

Lake Erie Fisheries Council, 749 Rowntree Ave., London, Ontario — Secretary, M. B. Wheatley.

Montreal Fish Merchants Association, Room 1217, 660 St. Catherine St., W., Montreal, P. Q. — Secretary, H. Welham.

Quebec United Fishermen, 6381 St. Lawrence Blvd., Montreal, P. Q. — Secretary, C. E. Desourdy.

Quebec Fish Producers Association, Suite 311-315, 65 Stainte Anne, Quebec, P. Q.—Secretary, Yves Poisson.

New Brunswick Fish Packers Association, 885 Main St., Moncton, N. B. —Secretary, J. W. Stewart.

Nova Scotia Fish Packers Association, P. O. Box 71, 237 Hollis St., Halifax, N. S.—Secretary, R. F. Johnson.

Canadian Salt Fish Exporters Association, P. O. Box 71, 237 Hollis St., Halifax, N. S.—Secretary, R. F. Johnson.

Atlantic Fisheries By-Products Association, Box 71, Halifax, N. S. — Secretary, R. F. Johnson.

Prince Edward Island Fisheries Association, P. O. Box 694, Charlottetown, P. E. I. — Secretary, A. W. Gaudet.

The Frozen Fish Trades Association, Ltd., P. O. Box E 5319, St. John's, Newfoundland—Secretary, E. A. Harvey.

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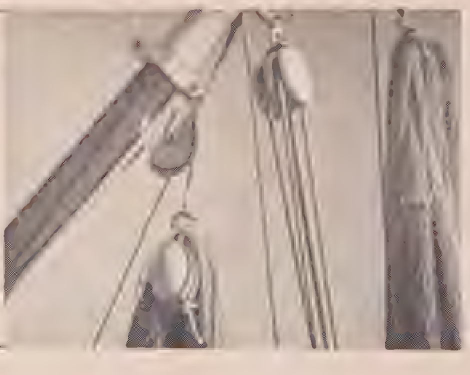


ICELAND

By DAVID OLAFSSON

● If you take the North Atlantic from Newfoundland on the west to the Barents Sea on the east you will in this area find some of the most prolific fishing grounds in the world. Almost in the center of the area you will find Iceland, situated between Greenland on the west and Norway on the east. The waters around Iceland for many centuries have been known to be some of the richest fishing grounds in the North Atlantic and have been visited by fishermen from many countries. During this century however the Icelanders themselves have greatly increased their share of the catch in the Icelandic area and are now taking much more than half the total catch.

● For the last 30 years the Icelandic fishing fleet has been almost completely motorized and the productivity of the fishermen has been great. This explains why comparatively few fishermen have been able to land a big catch annually. The number of fishermen, almost all of them being full-time fishermen, has for a long time varied little and is now well over 6,000.

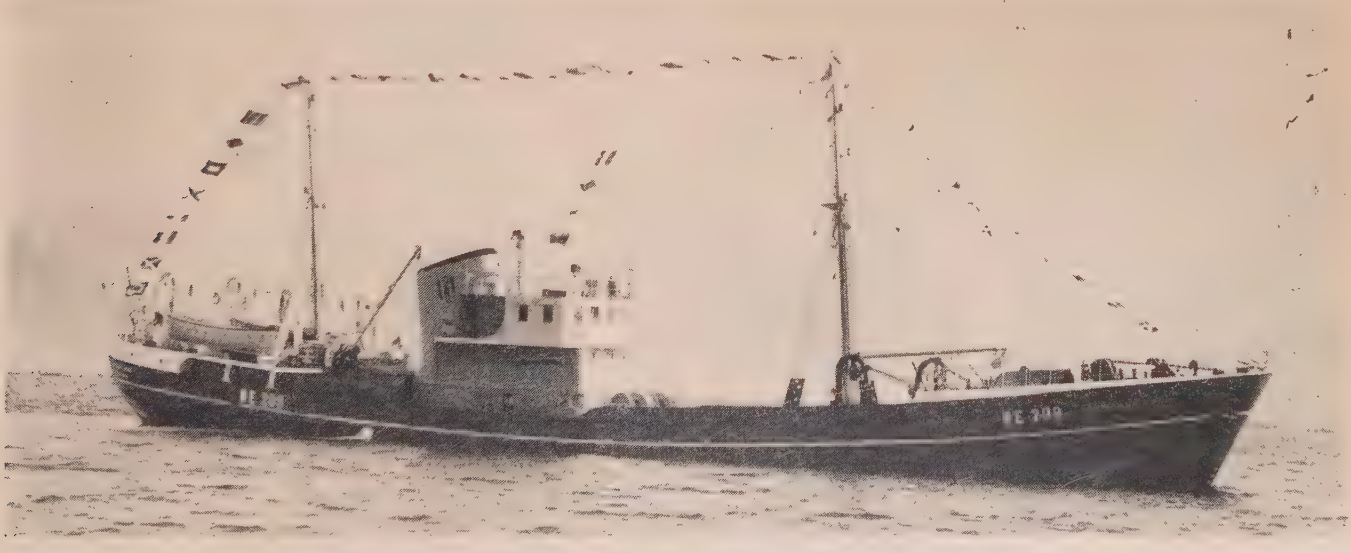
At the end of 1958 the Icelandic fishing fleet was, as shown in the table below:

The fishing fleet has been almost completely reconstructed in the post-war years and, although the number has not increased, its tonnage is about 125% more than in the immediate prewar period, and so the average size has increased greatly. Most of the big deep sea trawlers built immediately after the war were oil burning steamships, but during the last years the new vessels added to the fleet are all diesel-powered. Besides the trawlers, the main bulk of the fleet is composed of motorboats, most of them being in the

	Number	*GRT**	*Average GRT*
Trawlers: Steam	36	23,578	655
Diesel	8	5,422	678
Other vessels: Over 100 GRT	49	7,560	154
Under 100 GRT	614	21,213	35
Total	707	57,773	82

* Gross registered tons.

NOTE—Mr. Olafsson is Director of Fisheries of Iceland.



Modern Icelandic Trawler of 850 gross registered tons with diesel engine of about 700 hp.

Packaging Fish Fillets in a modern Icelandic plant for quick-freezing for export. Frozen fish constitute 35% of Iceland's export fish trade, which in the aggregate accounts for 97% of the national export volume.

size of 50-100 GRT, but their size has been increasing rapidly during the last years.

Depending on the type of fishery, there are several different kinds of fishing gear used. In the ground-fish fishery there are mainly three types of gear. The trawlers use exclusively otter-trawl, whereas the motorboats depend on longlines and bottomset gillnets, mainly for the catch of cod. In the herring-fishery the purse seine and the driftnets are the gear mainly used. In recent years synthetic fibers have been introduced and now all bottomset gillnets and an increasing part of the purse seines are of such material.

Catch, Species and Processing

• The following table shows the development of the Icelandic fish catch during the period from 1930. (Thousands of metric tons, round weight.)

According to this table, the year 1958 was a record year as the total catch was concerned. This year, 1959, however it looks as if the catch will be even bigger. During the first three quarters the total catch was 12% larger than at the same time last year and so it is probable that the total for the year will also be greater.

For many decades herring and cod were the main species caught. The herring catch was at times extremely changeable, whereas the catch of groundfish has been more stable. Since 1950 the catch of ocean perch (redfish) has been of growing importance, but the main part has during the last years been taken in Greenland, Newfoundland and Labrador waters.

The fisheries are highly seasonal. During the first five months of the year the main codfisheries are conducted where both trawlers and motorboats take part, the area of fishing being mainly at the south and west coast of Iceland. During the summer, from June to August, the motorboats are mainly engaged in the herring fishery at the north coast and after that this fleet moves to the southwest coast, where herring are caught until December. For the trawlers the ocean perch fishing starts immediately after the codfishing season and lasts more or less the rest of the year. Some trawlers however may go for codfishing during the last quarter.

The processing of the fish catch has undergone great changes during the last twenty years, as shown in the following table:

Utilization of the fish catch

	Percent of Total Catch		
Demersal fish	1938	1949	1958
Fresh on ice (landed abroad)	10	54	3
For freezing	2	29	65
For stockfish	3	0	10
For salting	80	16	19
For reduction	5	...	1
For other uses	..	1	2
Total	100	100	100
Herring			
For freezing	1	11	15
For salting	20	24	50
For reduction	79	65	35
Total	100	100	100

• As may be seen clearly from the table, the development has, as far as the demersal species are concerned, gone first from the saltfish to the fresh iced fish and then to the frozen fish, mostly fillets. The quick-freezing industry has during the last years become by far the most important branch of the processing industry, taking almost two-thirds of the total catch of the demersal species. From about 20 plants with a capacity of approximately 200 tons per 12-hour day in 1938 the number of plants has risen to some 88 with a freezing capacity of approximately 1000 tons. The theoretical freezing capacity is however far above the actual production, which is limited by such factors as the heavy concentration of landings in the early part of the year and the shortage of raw materials in other seasons. The freezing industry is on the whole modern and well equipped and complies with the highest sanitary standards.

The salting of cod and related species as well as the drying of stockfish still hold important positions in the processing industry, although salting has declined greatly since before the war. The production of stockfish is of

	Average 1930/39	Average 1940/44	Average 1945/49	Average 1950/54	1955	1956	1957	1958
Cod, haddock and related species	217	242	264	305	352	358	323	357
Ocean perch	...	...	17	51	76	62	65	115
Herring	99	179	126	59	54	100	117	107
Total	316	421	407	415	482	520	505	579

recent date, mostly in the last decade.

The reduction of herring for oil and meal for a long time has been the most important processing of the herring catch. Already before the war a sizeable industry had been built up and that was augmented greatly in the first postwar years. The failure of the herring catch at the north coast, where most of the reduction plants are situated, however has rendered most of the capacity of this industry idle for the last decade.

Exports and Markets

● The fishing industry of Iceland is a typical export industry. About 95% of the production is exported since the home market is a very small one, the inhabitants of the country numbering only 170,000. So the industry is entirely dependent on foreign markets. To the Icelandic economy the fishing industry is of paramount importance as practically the sole export industry. *Up to 97% of the total export of the country is derived from the fisheries.* The following table shows the quantities of the main products exported in 1958 (in thousands of tons) and their percentage of the total export value:

Frozen fish	66	35%
Dried salted fish	8	5
Wet salted fish	23	8
Stockfish	5	5
Fish on ice	10	2
Fish oils	18	6
Fish meal	43	10
Salted herring	31	9
Frozen herring	10	2
Herring oil	11	3
Herring meal	12	3

The markets for Icelandic fishery products are mainly to be found in the countries of Western Europe, in the United States and lately also in the Eastern European countries. Since the last war the U.S. has been a growing market for Icelandic frozen fish, but during the last few years the U.S.S.R. has taken bigger quantities than any other market. Other countries in Eastern Europe are also of great importance in this respect. The trade with the Eastern European countries is entirely based on the system of bilateral trade-agreements. The markets in Western Europe are gaining in importance for frozen fish but it may be expected that some years will pass before they can take any sizeable quantity of this product owing to the lack of suitable distributive system for frozen foods.

Salted cod and related species have always found a traditional market in the countries of Southern Europe and Southern America as well as in the Carribean area. Stockfish is marketed mainly in Nigeria and neighboring West African areas. Fresh fish in ice is exported to the Federal Republic of Germany and the United Kingdom. Fish oils and meal of all kinds find a ready market in Western Europe whereas salted herring is exported to the U.S.S.R. and other Eastern European countries and besides that to Sweden and Finland.

The Future of Iceland's Fisheries

● The future of the Icelandic fisheries is obviously closely linked with the abundance of fish on the coastal fishing banks around Iceland, since the most part of the catch is taken in that area. Is is to protect the fish stocks in this area and so to safeguard the future of the fisheries that Iceland has deemed it indispensable to extend her fishing limits to 12 miles from straight baselines.

During the postwar years there has been a rapid technological development in the Icelandic fishing industry, as regard the fishing vessels, the fishing gear and the processing industries.

In the years to come the most important task of the fishing industry will be to open up and develop markets in Western Europe, as well as to expand her markets in the United States, for frozen fish, this product already being by far the most important one in the exports of the country.

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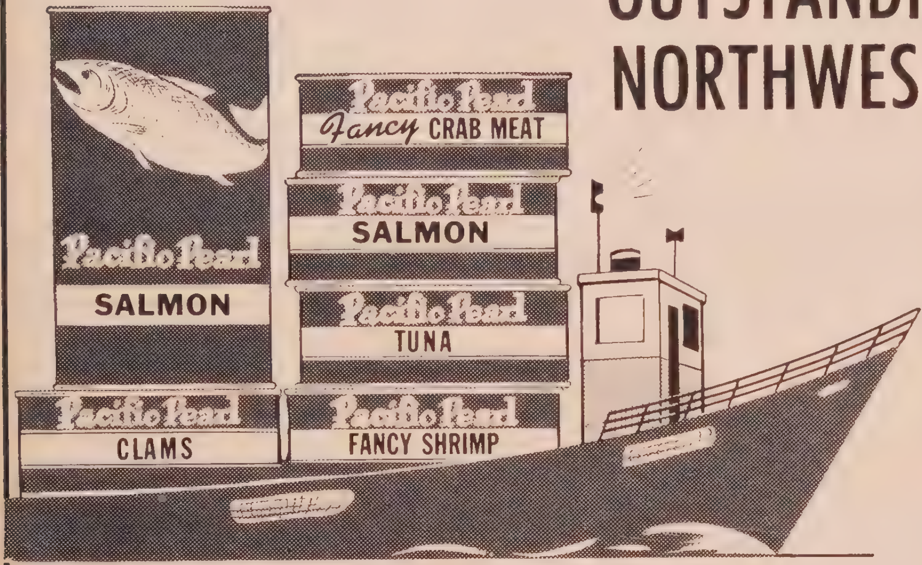

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AUSTRALIA

- Prawn production's steady rise in Australian waters continues to contribute importantly to that country's export trade in marine products, and promises to be a significant factor for the future in meeting the ever-growing market for shrimp or prawns in the United States.

While of course prawns have not approached spiny lobsters in volume or value, they have come to play a significant part in Australia's export business in marine products, where it appears they stand second only to lobster or crayfish tails.

Explorations under government auspices in 1959 encouraged the expectation that the prawn production could be substantially expanded along the east coast of Australia.

Currently Queensland is far in the lead in prawn production, with New South Wales an easy second.

- Australian tuna, with its immense potential, continues to resist exploitation for export, although up to 2,000 tons annually are used for canning, primarily for the domestic trade.

In 1959 there was a renewed effort to interest North American canners in frozen Australian Bluefin for canning; and sample shipments are known to have been made both to Canada and the United States. Quality was reported acceptable, and generally was rated superior to samples sent some years previously, when they were found too dark in color to prove attractive to the North American canners.

- Definite commitment of at least two of Australia's largest tuna producing vessels—the *Fairtuna* and *Tacoma* —to the export trade with the United States was announced just before the end of 1959.

These vessels were then prepared to operate out of Sydney, N.S.W., delivering their catches there for holding in frozen storage until a substantial shipment had been accumulated and a refrigerator vessel was available for shipment to American territory.

At the same time it was reported that another new Australian tuna clipper, *Estelle Star,* was approaching completion and would soon join the older vessels of the fleet in their fishing.

In reporting on the 1958-59 tuna season, F. F. Anderson, director of the Fisheries Division of the Commonwealth of Australia, reports to *Pacific Fisherman Yearbook*: "Production of Southern Bluefin tuna is rising both in New South Wales and South Australia, the total for the 1958-59 season exceeding 2,400 tons. The extent of Japanese tuna fishing off the Australian coast and Australian observations indicate that only a fraction of the resource is exploited. There are at present no large tuna clippers operating, the seasonal tuna fishery being carried out by small coastal craft, either by trolling or live-bait fishing. The largest Australian tuna vessels are 84′ long."

While the Australian tuna resource appears to consist primarily of Southern Bluefin, with "Northern" Bluefin as a secondary species, it appears that varying quantities of Yellowfin and Albacore also are taken. ("Northern" Bluefin is *Kishinoella tonggol,* and should not be confused with the Bluefin tuna taken off California or in the North Atlantic.

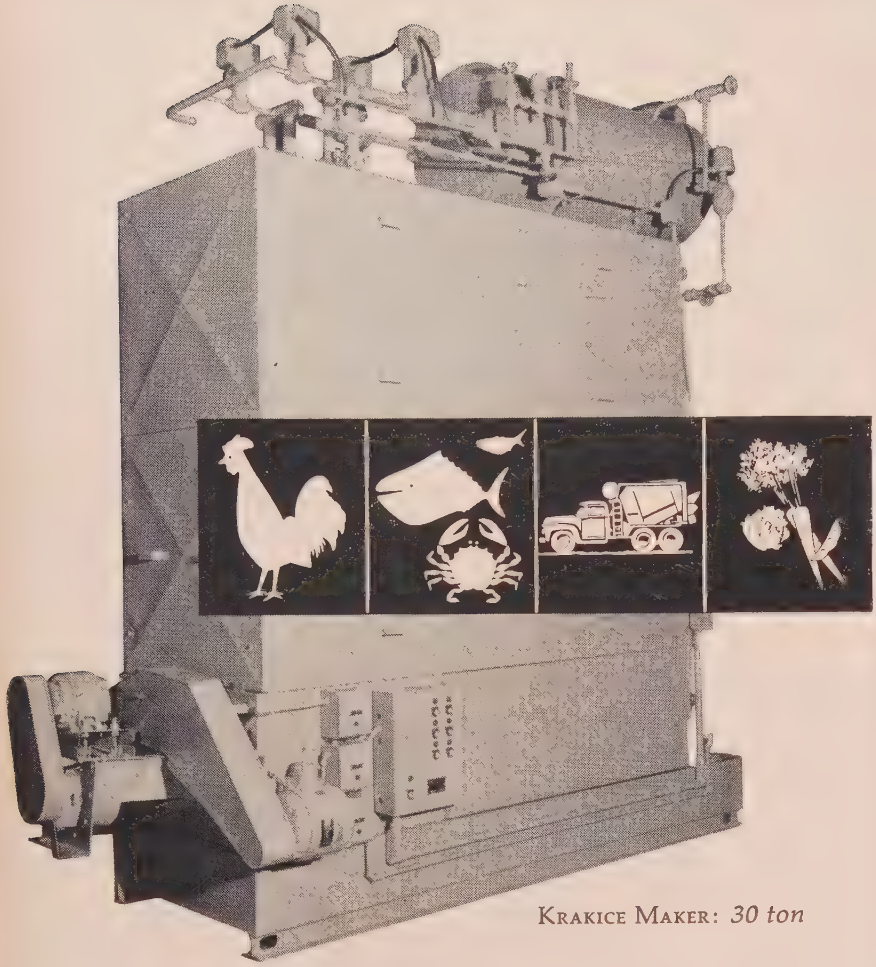
Indeed, the Japanese longliners fishing in the Indian Ocean not too far west of Australia are understood in the past year to have discovered an area producing Yellowfin of first quality in highly satisfactory volume.

- New emphasis to trawling in the Great Australian Bight was applied late in 1959 when the Southern Trawling Co., Ltd., of Adelaide purchased the 514-ton British diesel trawler *Princess Elizabeth.* The vessel is expected to begin large-scale trawling operations early in 1960.

The 161′ trawler is the first large, modern vessel of her kind ever to fish in Australian waters. She is being equipped with a mechanically refrigerated fish hold in order to permit her to work under sub-tropical conditions. She was built in 1952 and is powered with a 1,200 hp. diesel with two 10-hp. diesel auxiliaries. Her refrigeration is a Freon system designed to be used with crushed ice, keeping a full load of about 212 tons of fish at 32-34 degrees when water temperatures is 70 degrees and the air temperature 80 degrees.

- Australia's production of sea fish has remained relatively static for 30 years, despite a 50% increase in population during that time. Officials opinion in the commonwealth is that the coastal waters have been depleted as result of overfishing. Narrowness of the coastal shelf, save in the Great Australian Bight, and the relatively scant productivity of many tropical waters, perhaps has contributed to decline in production; while lack of satisfactory markets for pelagic species—such as tuna — has reacted against their being exploited effectively.

Although Australia is an oceanic country, with its population concentrated close to the sea, the nation produces only about half of its consump-



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tion of fish.

Per capita consumption runs from 15 to 16.5 lbs. per annum, a very creditable quantity, but half of it is imported, largely in the form of frozen fillets from the United Kingdom, Japan and Denmark, with other countries sharing in the business to lesser degrees.

Australian consumers have taken readily to packaged frozen fish and a substantial portion of the imports are in this form. There is a generally increasing number of self-service stores with refrigerated display cabinets throughout the Commonwealth and packaged frozen fish is available in many inland areas as well as in the metropolitan cities along the coast.

- Beside species which have been utilized to some extent in Australia, there is abundant evidence that extensive stocks of pilchards and anchovies occur in Australian waters, but lack of demand has restricted the attention given the resource. Investigators report that the Australian anchovy is comparable in quality with that utilized in Spain and Italy.

Small quantities of pilchards have been canned as sardines in the past, but at that time the enterprise was handicapped by the high cost of cans. That situation has since been corrected, but the limited demand has not encouraged enterprise.

Studies currently are under way as to the possibility of utilizing the pilchards and anchovies for manufacture of fish meal and oil, but the depressed condition of the market for fish meal in particular has a deterrent effect upon investment.

- Australian exports of both frozen tails of and boiled whole spiny lobsters—7,673,199 pounds—set a new record in fiscal year 1958/59 (July 1958-June 1959) for both quantity and value. Spiny lobster tail exports in 1958/59 of 7,092,217 pounds were 22% more than in 1957/58. Almost all of the tails were exported to the United States and other dollar areas.

Dollar earnings from frozen tail exports in 1958/59 were estimated at US $6.9 million as compared with $5.9 million the previous fiscal year—up 17%.

Although prices dropped on the United States market, good prices were received for most consignments in 1958/59. Western Australian consignments accounted for 82% of total shipments.

In Western Australia, midget and small tails accounted for approximately 57% of total State exports in 1958/59. For the year 1957/58, midgets represented 28% of total exports

AUSTRALIA

from Western Australia, whereas they constituted 29.4% of all 1958/59 exports from that State. At the same time the quantity of smalls exported has fallen from 30% to 28%. There has also been a decline from 22% to 19.3% in the quantity of medium tails exported from Western Australia. This size of tail brings the highest prices on the United States market.

In South Australia, small and midget tails together accounted for 25% of total tail exports and medium accounted for a similar amount. The other two sizes, large and jumbo, totaled 23% in Western Australia and 50% in South Australia.

This difference in percentages of sizes exported from those two States is, to a large extent, a result of the difference in size of the two species of spiny lobsters exploited in those States. The southern crayfish (*Jasus lalandii*), which is obtained in South Australia, Victoria, and Tasmania, is in general a larger spiny lobster than the Western Australian spiny lobster (*Panulirus longipes*) which constitutes the major portion of the Western Australia catch.

Australian Spiny Lobster Production

Fiscal Year	New So. Wales	Victoria	Tasmania	South Australia	Western Australia	Total
			(1,000 lbs. Live Weight)			
1958/59	471	749	3,045	4,000	17,516	25,781
1957/58	523	635	2,406	4,460	13,327	21,345
1956/57	473	689	2,579	4,385	10,763	18,889
1955/55	438	614	2,802	4,000	10,530	18,384
1954/55	510	832	3,256	4,294	10,906	19,798
1953/54	576	1,163	2,527	3,850	9,224	17,340
1952/53	543	831	2,770	3,500	8,100	15,744

Size details from States other than South and Western Australia are not yet available.

- Australian spiny lobster production increased substantially in the main fishing grounds in Western Australia. Victoria and Tasmania together also showed an increase over the preceding year of approximately 700,000 pounds. In South Australia and New South Wales, production fell. However, total Australian production exceeded the previous year's total by nearly 4.5 million pounds.

In all spiny lobster fishing areas the increase in the number of men and vessels in the fisheries, together with generally good weather, resulted in higher production. Owing to this increase in the competition for spiny lobster, the fishermen have been forced to fish over a larger area; in many cases they are now fishing out to the 60-fathom line; and at the same time operating a larger number of pots than several years ago.

- Late in 1959 it was officially reported that South Australia operators had completed definite arrangements to export considerable quantities of frozen tuna to the United States during 1960. At that time R. M. Fowler, general manager of the South Australian Fishermen's Cooperative, Ltd., reported in Adelaide that samples sent to the United States had resulted in placing an order for substantial tonnage.

Australian Exports of Spiny Lobsters by States

State	1958/59		1957/58		1956/57	
	Tails	Whole	Tails	Whole	Tails	Whole
			(1,000 lbs.)			
Tasmania	185	110	118	93	224	73
South Australia	1,109	266	1,092	92	1,032	182
Western Australia	5,798	205	4,605	566	3,779	73
Total	7,092	581	5,815	751	5,035	328

It is known that the cooperative has booked space on a refrigerator vessel which is due to pick up around 300 tons of tuna at Port Lincoln, South Australia, in April or May. It is anticipated that this will be only the first consignment of several shipments.

- Pearl culture experimentation carried out in Brecknock Harbor, Western Australia, by a joint company combining Australian, American and Japanese interests is said to have developed satisfactorily since its inception in 1956. The pearls thus far produced by application of Japanese methods are said to be of superior quality, and to grow much more rapidly, and thus to larger size, than is the case in the Japanese industry. This is presumably due to the species available in Australian waters, as well as to the warmer natural conditions prevailing there.

- Australian pearl shell operations, as distinguished from precious pearl culture, are said to have encountered some economic difficulties as result of competition, largely from synthetic substitutes. As result of this condition, the Australian government has matched funds with the Australian industry and United States users of pearl shell for a fund to be employed to be used in promoting the use of this distinguished article in the American market.

Japanese pearl shell fishing off Australia operated under a quota of 375 tons in 1959, with fishing confined to certain areas.

Australian Exports of Spiny Lobsters

To —	1958/59		1957/58	
	Tails	Whole	Tails	Whole
		(1,000 lbs.)		
United States	6,842	477	5,626	641
Hawaii	216	..	158	..
Singapore	11	86	12	67
Canada	13	2	10	33
Other	10	11	9	10
Total	7,092	581	5,815	751

DIRECTORY

Australia Official Fishery Agencies

Fisheries Division, Department of Primary Industry, Canberra, Australia —Director, F. F. Anderson.

Division of Fisheries and Oceanography, P. O. Box 21, Cronulla, N. S. W.—Chief, Dr. G. F. Humphrey.

New South Wales Fisheries Division, Chief Secretary's Department, Box 30, G. P. O., Sydney, N. S. W. —Superintendent, N. V. Harris.

Queensland Department of Harbours and Marine, Box 509H, G.P.O., Brisbane, Queensland—Secretary, E. J. Coulter.

Victoria Fisheries and Game Division, Chief Secretary's Department, 605 Flinders St. Extension, Melbourne, Victoria—Director, A. Dunbavin Butcher.

South Australia Fisheries and Game Department, Box 901 E, G. P. O., Adelaide, South Australia—Acting Director, A. Bogg.

West Australia Fisheries Department, 108 Adelaide Terrace, Perth, W. A.—Director and Chief Inspector, A. J. Fraser.

Tasmania Sea Fisheries Advisory Board, Department of Agriculture, Box 673 E, G. P. O., Hobart, Tasmania—Chairman, F. W. Hicks.

Tasmania Fisheries Department, Box 673 E, G. P. O., Hobart, Tasmania—Secretary, L. A. St. Leger.

POLAND

By HENRY GANOWIAK

● After World War II Poland regained access to the sea which made possible development of a fishing industry. The fish caught in 1938 by the sea-fisheries of the present Polish Baltic coast (formerly Polish and German) amounted to 37 thousand tons, of which the Polish catches were 13 thousand tons only. The fishing fleet of that area numbered altogether 18 trawlers, 28 drifters, 533 cutters, 448 motor boats and 3,253 rowing and sailing boats, giving employment to about 9 thousand fishermen.

At the end of the war in 1945 the ports along this coast were either burned-out or in ruins and there remained only several old boats, as well as a number of sunken coastal vessels in recovered condition. In June, 1945, 3 cutters and 60 boats were put into operation and they caught 67 tons of fish during the first months of their work.

A deficit in animal protein, taken together with the low and comparatively expensive development of meat production, enhanced the economic importance of the sea fisheries. As the resources of the nearby Baltic fishing grounds were limited, it was necessary to develop the deep-sea fisheries. Since 1952, owing to the rapid development of the shipbuilding industry, a lot of deep-sea fishing vessels have been built. After 13 years Polish sea-fishery landings in 1958 amounted to 127 thousand metric tons of fish from Baltic and deep-sea fishing grounds. Table 1 shows the catch of the Polish sea fisheries from 1938 to 1958 and expected catches in 1959.

At present the catch per capita of population amounts to about 9.7 lb. (4.4 kg). This corresponds to a real consumption of some 6.6 lb. (3 kg). The supply of adequate amounts of animal protein up to recognized biological standards sets a very serious task for Polish agriculture and fisheries. The part to be played by fisheries is particularly important, as protein could be supplied by the fishing industry in a shorter time and at a lower cost.

Table 1
Polish sea-fisheries catch—1938-1958
(*in thousand metric tons*)

Year	Total	Baltic	North Sea
1938	13,0	2,0	10,0
1945	2,0	2,0	. . .
1946	23,4	22,2	1,2
1947	39,5	33,5	6,0
1948	47,1	38,3	8,8
1949	57,2	43,7	13,5
1950	65,8	58,1	7,7
1951	71,7	64,1	7,6
1952	86,8	72,8	14,0
1953	89,4	66,7	22,7
1954	99,4	70,4	29,0
1955	107,3	65,6	41,7
1956	122,5	73,5	49,0
1957	125,7	72,2	53,5
1958	127,3	67,3	60,0
1959	*146,5	*77,2	*69,3

* Expected catches at presstime.

There are seven major ports from which the fishing fleet operates, Gdynia, Swinoujscie, Szczecin, Wladyslawowo, Leba, Ustka, Kolobrzeg and tens of smaller landing places serving the coastal fisheries.

The total tonnage of the Polish fishing fleet reached 54,000 tons gross by 1959 and the expected catch for that year will be about 147 thousand tons of fish, out of which the state-owned (nationalized) companies are expected to land 110 thousand tons, the cooperative sector about 20 thousand tons and the private sector about 17 thousand tons.

● The fishing fleet consists of: 40 distant water trawlers (steam engine, 650 BRT, Polish built); 15 smaller trawlers (of pre-war built, English type, different types); 50 drifter-trawlers (motor vessels, 300 hp, Polish built); 3 drifters (like typical Dutch drifters); 75 cutters of 24 meters length (see description below); 152 steel cutters from 17 meters to 19 meters length (Polish built); 240 small cutters (10 to 16 meters); 396 deck and half-deck motor boats; 24 lug-sail boats; 456 rowing and sailing boats.

The use of 24 m. long (80 ft.) steel boats for the Baltic and North Sea fishing grounds is the latest development in Poland's fishing fleet. Most of these boats operated by the Polish open-sea fisheries for several years have wooden hulls, but experience has proved that the steel-hulled vessels are more efficient and cheaper in operation. The steel boats reach a speed of 10 knots and of 3 knots when trawling, and they carry a crew of nine. The amounts of fuel-oil, water and provisions allow a 15 day working period at sea, with a range of 3,600 miles. The hold, which is cork-insulated, allows for the stowage of about 700 boxes of fish (each box 40 kg), or 30 barrels. During the first, second and fourth quarters of the years these boats are used on the Baltic for fishing cod, herring, flounders by trawls and for sprats by pair mid-water trawls. Lately they have even been used for the hook-fishing of salmon in November and December. During the third quarter, when there is considerable fall in landings on the Baltic, these boats are used for herring fishing in the North Sea by trawl. They are either accompanied by mother-ships or call at bases in foreign harbours (in 1959 at Sunderland). The state-owned enterprise "ARKA" at Gdynia, owns a fleet of about 60 of these boats. Their

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NOTE—Mr. Ganowiak, author of this article, is secretary of the Sea Fisheries Division of the Polish Economic Society.

Polish trawlers of the "Dalmor" type in the fishing port at Gdynia, Poland. These craft are steamers of 800 and 1,000 hp. in two classes, and are 194′ in length.

average output on the North Sea grounds last year was 145,6 tons, against 158,1 tons in 1957, and on the Baltic grounds 144,3 tons, compared with 218,3 tons in 1957. The fall in output in the Baltic last year was due to transferring the whole fleet to the North Sea herring grounds, for in Poland herrings are valued higher than white fish! In general, the lower landings last year were due to lower efficiency of the Baltic as well as that of the North Sea grounds.

According to information received from the Maritime Fisheries Institute at Gdynia, 24,000 persons are at present employed by Polish fisheries, 8,000 of these being employed on the sea and 16,000 being employed on shore in the fish processing plants and canning factories etc. Apart from the above, 6,000 persons are engaged by the fisheries in the shipyards, the net and packing factories, design offices, schools, radio service, etc. *There is an average of four persons employed on shore, for every man employed at sea.*

- The species of fish landed:

Cod is mainly fished in the Baltic, last reported landings, 1957, amounted to 58,000 tons. Besides the above, Baltic fishing yields several thousand tons of herring (small) and sprats, as well as a few hundred tons each of prime fish like eel, salmon, turbot, flounder, plaice, perch-pike, trout, etc.

The main object of deep-sea fishing is herring, catches of which in 1958 amounted to about 55,000 tons. Moreover deep-sea fishing yields about 2,000 tons of mackerel and small quantities of white fish as addition to herring.

The annual yield of fish from the Baltic is considered to be 300,000 tons—just over one-quarter of this (75,000 tons) is believed to be the limit of Poland's share in this amount and is already caught yearly by Polish craft. Therefore, the further development of the sea fishing industry of Poland must be based primarily on deep-sea fishing.

Deep-sea Fishing (state-owned companies only)

- Formerly at the beginning of April Polish mother ships left their home-port for the North Sea, to cooperate with the fishing fleet till the beginning of December. Polish ports are situated far from the fishing grounds which is a serious disadvantage, as trawlers and cutters have to undertake long, unproductive voyages lasting from 3 to 4 days each way to the fishing grounds.

Both before and for several years since the war, Polish fishermen took advantage of shore bases abroad at the peak of the fishing season, usually in Holland (at present at Ostend—Belgium); but this practice incurrs heavy expenses in foreign currency and to avoid them, it was decided several years ago to try floating bases i.e. employing parent-vessels in the North Sea fisheries.

For this service two old big vessels were adapted and they in turn exercise their duties on the fishing grounds. They are s/s *Kaszuby* (ex *Wisconsin*) 10,021 dwt. and s/s *Pulaski,* about 10,000 dwt. These ships carry all kinds of supplies for the fishing fleet, and at the same time relieve them of the barrels of salted herring for shipment home.

The parent-vessels operate in the vicinity of actual fishing grounds, anchored in some fairly sheltered place, usually close to the British coast, just outside the territorial waters.

All Polish vessels fishing for herring in the North Sea take advantage of the services offered by parent-vessels, with the exception of the big trawlers, which due to their long range and comparatively high speed, can operate successfully from their home ports. Altogether the parent-vessels are now taking care of 44 drifters and drifters-trawlers, 14 trawlers and about 70 cutters (24 m long). The parent-vessels deliver salted herring ashore for repacking only.

The following figures give a fair picture of a job done by them in the course of the last year:

Loaded at sea and delivered to home ports — 26,366 tons of herring, i.e. about 326,000 barrels.

Supplied to the fishing fleet and dis-harged at sea: 332,612 barrels (empty nd with salt), 22,000 tons of coal-unker, 3,150 tons of fuel oil, 12,000 f fresh water, 223,000 rations of ood.

Naturally, employment of the par-nt-vessels has its disadvantages. First f all the fish is kept for several weeks n board in cargo holds, not without ffect on its quality. The expenses of unning these vessels are not moderate ither. Nevertheless the quantity of ish landed now would decrease with-ut doubt, if the fishing fleet were de-rived of the services of the parent-essels.

ishery Cooperatives

• Development of Polish fishery co-peratives started in 1945. At present here are 30 of them dealing in fishing, and two engaged in fish processing. They are of a productive type and em-loy 4,000 members, including 2,000 ishermen.

These cooperatives belong to the Association of Fishery Cooperatives of Gdynia, which in turn is affiliated to he Central Association of Productive Cooperatives in Warsaw.

Fourteen cooperatives are situated near the Vistula and Odra rivers and concentrate on inland water fishing.

In 1958 the catches of Polish fish-ery cooperatives reached 17,600 metric tons, 14% of total Polish fish production, which was 127,300 tons. Until 1957 fishery cooperatives did not participate in deep-sea fishing, but in 1958 the first three cutters were directed to the North Sea.

Polish Fish Export

• The variety of goods exported by Polish fishing industries is very considerable.

The main position in the list of fish exports, is that of preserves, which are mainly made from salt-water fish.

Of the exports, the most important are smoked Baltic sprats, which form 75% of the total amount of fish preserves exported from Poland. During the last few years, the main buyers of sprats were the central European countries of Czechoslovakia, Rumania and the German Democratic Republic. Smaller quantities were forwarded to the U.S.A., Canada, the U.K. and German Federal Republic. Israel also bought about 50 tons of sprats in oil, yearly.

The following table II. will give some idea of the fish preserves exported in the last three years: (in metric tons).

Table II.

1956	1957	1958
1511	1252	1157

It is expected that the following amounts will be exported during the next few years:

1959	1960	1961	1963	1965
1800	1900	2000	3000	4000

Polish fishing industries are preparing to carry out this plan, special attention is to be paid to the uniform quality of the products, the taste and the exterior appearance of the packing. At the same time, good quality packing, will assure that the preserves will be in good condition for at least one year, in all climate conditions.

The packing will be in accordance with the receivers' requirements and taste. The tins with the preserves will be packed in strong cardboard cartons or wooden cases.

Apart from exports of fish preserves, Poland is a well-known exporter of fresh fish, both fresh-water and those from coastal waters. The most important position in these exports is eel, which is exported either frozen or live, the latter being transported in special wagon or car-tanks. The chief receivers of eel are: Holland, Denmark and German Federal Republic. It is also expected to export eel to Switzerland and Italy. About 600 tons of these fish are exported from Poland yearly.

Smaller amounts of salmon both frozen and smoked in slices are exported (about 200 metric tons yearly), The chief receivers of these are: the U.K., France, Sweden and the German Federal Republic.

POLAND

Polish Program for 1959-65

- In view of the plans for the future development of Polish sea fisheries during the years from 1959-1965, announced by the Polish United Workers Party, the Fisheries Economy Department of the Ministry of Shipping has worked out a definite plan for the coming years, covering the expansion of sea fisheries and the industries associated with these.

These plans have been forwarded to all the enterprises interested in such, in order that they may be studied and valued by specialists so that any alterations or additions may be made.

According to the plans, it is expected that the following amounts of fish will be landed during the years:

	Thousand tons
1960	161,2
1961	173,9
1962	186,7
1963	218,7
1964	248,0
1965	278,2

Most of the fish landed will be cod, redfish and herring from North Sea and North Atlantic fishing grounds. It is expected that the amount of cod landed will increase from 46,140 tons in 1959 to 104,000 tons in 1965, similarly, herring catches are expected to increase from 61,900 to 111,500 tons. Apart from these, landings of Baltic herring are to increase from 16,950 tons in 1959 to 24,000 tons in 1965 and about 16,000 tons of sprats are to be landed yearly. The plans also foresee that certain amounts of such fish as salmon and eel will be brought home, mainly to be sold on the export market. In order that these increased plans may be realized, it will also be necessary to increase the number of fishing vessels.

With regard to deep-sea fisheries, by 1960, it is expected that the building of the present type of steam trawlers will be discontinued and there will be a change-over to large factory-trawlers, freezers-trawlers, modern motor trawlers and large deep sea drifter-trawlers.

The plan for the development of the fishing fleet during 1959-1965, foresees that the following types of vesssels will be put into operation:

Motor trawler (item 3) similar to Icelandic trawler "Gerpir" and German trawlers "Sagitta" and "Karl Kampf."

She has 20304 cubic feet capacity, allowing to store 270 tons of fish, of which one third will be frozen on board. This vessel is destined for herring and mackerel fishing. Approximately yearly output is 1,400 tons.

Factory trawler (item 2). This vessel is bigger than the previous one. Her holds have the capacity to store 600 tons of frozen fish. She will be equipped with well known "Baader" fish processing machines. This vessel is similar in a way to the Russian factory ships of "Pushkin" type and to the English "Fairtry."

Freezing Trawlers

- This vessel is the last of new types of fishing vessel now being designed at Polish shipyards. She will be smaller than the factory ships and without most of the processing equipment. All catches will be simply frozen onboard and stored in the refrigerated holds.

At the same time, several fishing ports will be made into shore bases for the fishing fleet. This is expected to cost about 370 millions zloty, of which about 100 million will be the cost of rebuilding of the Gydnia fishing harbour, a similar amount being used for the equipping of such a port at Szczecin and a further 100 million zloty will be paid for the rebuilding and developing of the third shore base—that of the fishing harbor at Swinoujscie.

Shore based fisheries industries are also expected to be improved, at a total cost of about 114 million zloty.

Lastly, expenses occurred in the expanding of the sales possibilities in the background, will amount to 252 million zloty, of which 58 million will be used for the building of warehouses and cold-storage plants, and 40 million zloty for transport—especially cooler trucks. Special fish shops, bars and ready-made food shops are to be more widely developed.

In order to service the whole, it will be necessary to employ larger staffs. It is expected that the number of persons employed in these industries will increase from 24,000 in 1959 to 30,000 in 1965 of which one third will be fishermen.

A sea-fisheries development plan for the year 1965-1975, is at present being worked out, in Poland. It is expected that the amount of fish landed in 1975 will reach 500,000 tons. Taking into consideration that the population of the country will reach about 38 million, this amount will mean about 13 kilograms of fish (about 9 kilograms of fish manufactures) per head, yearly, which is at present the average yearly consumption per head of the world's population.

Based on results of tests made by the international fisheries organizations and also Polish scientists, it has been stated that of the 500,000 tons of fish landed, 80-90,000 tons should come from the Baltic, 120-130,000 tons from the North Sea and Norwegian waters, 250,000 tons from the North Atlantic fishing grounds and 50,000 tons from the Central Atlantic (the Northwest African fishing grounds).

In order to realize these ambitious plans, Polish sea fisheries, intend, in the near future, to fish such distant waters as those of Iceland, Greenland, Newfoundland and the Barent sea. Apart from searching for new areas abundant in cod, redfish and herring, the interest shown by the Polish fisheries in the fishing for tunny and sardines on the Northwest African grounds, is growing month by month. Proof of this was sending of the Sea Fishermen School training vessel, the *Jan Turlejski* to these grounds, in the middle of January, 1959, in order to carry out trials.

The second experimental voyage was made in May this year, to grounds near Labrador to fish the redfish. Three trawlers took place in this. The 31-men crew of the *Wislok*, worked non-stop for three days, loading 127.8 tons of redfish into cooled holds.

TABLE III.

	1959	1960	1961	1962	1963	1964	1965
1. *Steam trawlers* 500 DWT 660 BRT, Length o.a. 59 m, Range 24 days, Crew 30	12	9					
2. *Factory trawlers,* 1250 DWT, 2600 BRT, Length o.a. 85 m, Range 70 days, Crew 92		1	3	3	3	3	2
3. *Motor trawlers,* 550 DWT, 600 BRT, Length o.a. 61 m, Range 50 days, Crew 31			5	9	9	3	2
4. *Freezer trawlers,* 1000 DWT, 2400 BRT, Length o.a. 80 m, Range 70 days, Crew 73				1		2	3
5. *Deep sea drifter-trawler,* 260 DWT, 350 BRT, Length 44 m, Range 30 days, Crew 17				1			
6. *Cutters* (trawling) Length 24 m (see description page 3)	11	6	6	6	6	6	6
7. *Cutters* (trawling) for Baltic fish. grnds. only, Lgth. 17 m	10	10	6	6	6	6	6

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UGANDA

By ALOYS P. ACHIENG

• Uganda is a British Protectorate in East Africa. It lies astride the Equator and is bounded by Sudan on the North, Kenya on tha East, Tanganyika on the South, and the Belgian Congo on the West.

The population was estimated in 1957 at 5,678,900, made up of 5,610,000 Africans, 59,900 Asians, and 9,000 Europeans. Its total area is approximately 94,000 sq. miles of which 13,600 sq. miles are open water (lakes and rivers). The world's second biggest lake, Lake Victoria, which has an area of some 26,000 sq. miles, is partly in Uganda. The other great waters are Lake Kyoga, a vast irregular area overgrown with papyrus, with broad channels of clear water; Lake George; and Lakes Edward and Albert. These last two are partly in Uganda and partly in the Belgian Congo. All are rich in fish, and Uganda's fish production comes mainly from these lakes. Gill-netting, beach-seining and long-lining are the methods most commonly used.

The fishing industry is growing at the moment along three main lines:

(1) A steady increase in fish production from the lakes.

(2) A growing interest in the improvement of fish marketing and processing techniques, and

(3) A rapidly growing program of fish ponds.

• The industry is manned mostly by Africans, and provides full or part-time employment for some 15,000 people. About 30 Europeans are engaged in fisheries research and development. Most of these are government officers, though a few are active in the distribution of nets and motors. A number of Asians also find employment in the industry. Fishing craft number about 4,000, many of which are still hand propelled. Others use small sails in addition to being propelled by paddles. The more progressive fishermen have fitted their craft with outboard engines, and others are keen to obtain fully powered craft.

The catches include many types of fish, ranging from the lung-fish (Protopterus) to the butter fish (Schilbe) and the elephant-snout fish (Motmytus). All have a ready sale in the African market. The Ngege (Tilapia spp), however, is the most important species economically and is popular with all races. In the Western Province of Uganda are some of the most productive lakes in the world—Lakes George, Nakivali and Kachira, and these yield unusually large crops of Tilapia. The yield from Uganda waters has increased steadily as can be seen from the table below:

Year	Annual Production (In Tons)	Landed Value (In $)
1955	24,850	$2,758,000
1956	44,950	5,008,360
1957	48,318	5,195,400
1958	52,638	5,863,894

Much of the increase in fish production is due to a rapid shift to nylon and terylene (dacron) nets and outboard engines. In 1957 there were 700 outboard engines in use. At the end of 1958 there were 1,200. Experiments conducted by the Game and Fisheries Department have shown that nylon and terylene nets have a greater catching power than the flax and cotton nets used in the past. On Lake Nyamsigeri (a small lake in Western Uganda) a closely controlled experiment showed that a best quality flax net fished effectively for 20 days while a nylon net lasted 116 days. Neither net was repaired during the experiment. It is interesting to note that most of the shift to more modern types of gear and propulsion was accomplished without direct financial help from the Government. The sale of nets, engines, and other fishing gear is now a thriving industry in Uganda.

• Production from minor waters has also doubled, due to the fact that more people are now fishing in dams and rivers; and fish ponds in many parts of the country are beginning to produce fish for the owners.

It has been realized that an improvement of access roads to certain points on some lakes can increase the production of fish in many ways. In the Lake Albert area, for instance, the construction of an all-weather route to the southern end to connect with larger centers in the country would open an almost virgin fishery with a potential output valued at more than $280,000 annually.

There are roughly 2,500 sq. miles of permanent swamps in Uganda, the water from which might be utilized in connection with fish farming. Considerable progress has been made since 1953 in this particular form of production. The Game and Fisheries Department has established a fish farm for experimental and demonstration purposes. Observations have indicated that *Tilapia zillii*, a weed eater which can be fed on grass clippings, is likely to be the most successful fish for culture purposes. At the fish farm, *Tilapia zillii* have grown from fry to ¾ lb.

Mr. Achieng is a Fisheries Development Officer of the Uganda Game & Fisheries Department. At present he is on a two-year scholarship leave awarded by his government, and is attending the University of Washington College of Fisheries, Seattle, Wash., U.S.A.

UGANDA

fish in less than a year and have bred prolifically. Extension work has been pushed vigorously and fish ponds are being constructed in many parts of the country. In May, 1958, there were altogether 2,403 fish ponds recorded. In December of the same year the number had increased to 4,832. In some parts of the country (particularly in Buganda Province) very high yields are being obtained from the fish ponds, and some owners report profits of $35 per month from the sale of surplus fish.

MARKETING:

● The geographic distribution of fish within Uganda is fairly broad, but it is too heavily concentrated in areas immediately adjacent to production centers. Marketing in most areas is done by itinerant fishmongers. In 1956 there were over 8,000 fishmongers licensed. Although the bicycle-operating fishmonger still distributes some of the catch, an increasing proportion is being transported by motorcycle, lorry and automobile. Continued improvements in transportation are leading to wider and faster distribution.

Most fish is salted, sun dried or hot smoked before marketing. Hot smoked fish are more popular than salted fish in the Uganda markets, but both find a ready sale in the Belgian Congo. Processing is carried out by the fishermen themselves. At Katwe and Lake Edward (Western Uganda) there are African and Asian-owned processing plants which have permanent buildings and concrete salting vats. The quality of the fish produced is good. One Asian concern has already installed a quick freezing plant at Katunguru (near Lake George) in view of the increasing popularity of fresh fish in the African markets. The Uganda Fish Marketing Corporation (TUFMAC for short) had previously established a modern processing plant on Lake George, for freezing, salting and smoking fish. It operates a blast freezer which enables it to produce quick-frozen Tilapia fillets, distributed by air to larger centers in East Africa. The same organization supplies buyers from the Belgian Congo, and also sends fresh fish by road to other parts of Uganda. TUFMAC recently (1956) installed a fish meal plant at the Lake George factory, and high quality meals are now being produced from whole lung-fish (Protopterus) mixed with offal and frames of Tilapia resulting from the filleting process which had previously been thrown away.

In 1958 Uganda's exports of salted, smoked, dried and frozen fish totalled 12,000 tons (fresh equivalent) valued at $1,212,400. The exports included fish meal from the TUFMAC plant. In the same year approximately 50,000 tons of fish (including imports) were sold for consumption within Uganda. This figure represents a per capita fish consumption of about 16 lbs. per annum.

● Uganda has been fortunate in obtaining technical assistance from the Food and Agriculture Organization of the United Nations (FAO). From January, 1957, to May, 1957, K. V. R. Sastry, a fisheries statistician from FAO, surveyed the existing methods of collecting catch and market data and made recommendations. In June, 1957, two other FAO experts arrived in Uganda. One was Dr. J. A. Crutchfield, Associate Professor of Economics at the University of Washington, Seattle, U.S.A. Dr. Crutchfield conducted a year's survey of the marketing situation, particularly in the study of problems of disposal of fish and measures for increasing the efficiency of marketing operations. The other was D. H. Fry, Senior Fisheries Biologist of the California Department of Fish and Game. Mr. Fry spent a year studying the Lake George Fisheries with a view to assessing their potential production. At the completion of his studies, another fisheries biologist, J. B. Kimsey (also of the California Department of Fish and Game) was sent by FAO to take over the study of Lake George Fisheries for a further period of one year. In August, 1959, Dr. A. G. Wurtz, a fish-farming expert, arrived in Uganda to begin a year's study and make recommendations on the development of fish-farming. This is an example of FAO's technical assistance given to assist the people to help themselves, and through the cooperation of these experts and the officers of the Game & Fisheries Department and other government officials a great improvement has been made.

● Lack of meat and the difficulty of getting enough protein still presents a major problem in Uganda. The growth of the fisheries represents a direct attack on the serious problem of protein deficiency in the country.

Responsibility for the development and control of all fisheries in Uganda lies with the Game and Fisheries Department. The Department's aims are to provide local fish requirements from the country's own resources, and in the long term to achieve the maximum sustained fish production from all waters. Most of Uganda's fish production comes from the inshore waters of lakes, and these in many cases appear to be approaching their maximum production. On the other hand, the offshore waters and certain inaccessible points on some lakes have considerable reserves of fish which have remained almost unexploited. The growth of the population throughout the country is placing heavy demands upon our natural resources including fisheries. Maintaining stocks of fish has become a critical necessity. The Game and Fisheries Department is working hard to answer this challenge, and with a view to providing a sustained supply of fish for both the economic and recreational needs of the people.

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GREECE

By C. D. SERBETIS

● Fisheries of Greece divide naturally into those pursued in the sea and the inland waters; and these each into three classifications.

Thus the sea fisheries are considered variously as: small, medium and large, these divisions being based primarily on the character of the vessels engaged. The large grouping includes vessels working the Atlantic Ocean.

Inland waters fisheries are those of the ponds and lagoons, lakes, or rivers.

Annual landings of edible fishes from all these sources exceeds 80,000 tons, of which approximately 10,000 tons are from inland waters.

This is a very large gain over pre-World War II years, when the overall annual catch ran from 25,000 to 30,000 tons, the inland waters accounting for from 5,000 to 7,000 tons.

● Make-up of the Greek sea fisheries catch in recent years has been as follows:

Pelagic species	40.9%
Bottom fish	52.4
Molluscs	5.1
Crustaceans	1.6

Annual production of the Greek fisheries in recent years is stated thus:

Year	Metric Tons
1952	30,000
1953	43,000
1954	46,000
1955	52,000
1956	60,000
1957	75,000
1958	80,000

This large and consistent gain since the liberation of Greece in 1945 has followed recognization of the industry and thoughtful development of the fishing fleet, which during the long occupation had been reduced to 25% of its better units.

Today the fishing fleet of Greece includes approximately: 10 vessels engaged in the Atlantic fishery; 800 vessels of the medium size and range classification; 4,200 powered boats engaged in the small fishery; and 8,000 sail or oar-powered small craft.

Growth of the Greek fishing fleet shows up in average character as well as in numbers of vessels, and evidenced in these data:

Year	Average Tonnage	Average Horsepower
1938	13.9	N. A.
1948	15.1	64.3
1949	26.3	76.8
1950	27.4	81.0
1955	33.8	102.0
1956	37.0	106.6
1957	41.4	109.8

● Technical equipment of the vessels has kept pace with size growth and has contributed largely to their independence of operation. The Greek fleet now fishes to 500 meters of depth, and often ranges far into international waters, thus reaching populations never before exploited for Greece, whose fishing ports exceed 150 in number.

Of these about 40 deserve to be ranked of importance, with the leading 10: Piraeus, Salonica, Volos, Chalkis, Kavala, Patras, Mytilini, Samos, Chios and Rodos.

The number of fishermen approximates 40,000, with about 11,363 engaged in the large and middle type of fishery, the remainder being in both the small sea fisheries and those of inland waters.

In addition to the 40,000 directly engaged in fishing, it is believed at least 10,000 more are engaged in serving them through distribution of the catch, its transportation, boat building, net manufacturing, and other related crafts.

Greek fishermen in the small fishery generally are paid in part by the day and in part on shares.

● Greece consumes most of its fish production fresh, although fish is sometimes frozen, while ice frequently is used for protecting freshness.

Most of the fishing vessels in the medium classification are provided with refrigeration—as are the fishing ports and distributors' establishments — only on the large vessels engaged in the Atlantic fishery are the fish actually frozen.

Of the total Greek landings of fish about 10,000 tons are salted or otherwise conserved. This form of preservation occupies about 100 salteries located near the fishing centers. These plants produce about 6,000 tons of salted fishes, principally sardines and anchovies.

There are four Greek fish canneries, beside some additional plants which

Greek Directory of Fishery Organizations

Fisheries Directorate, Ministry of Industry, Athens, Greece — Director, Ch. Serbetis; Inspectors, T. Scourtas, D. Seirsis, J. Zompolas, A. Stephanides.

Union of Boat Owners, Mcg. Ghiannoulaton, Piraeus, Greece.

Union of Fishery Cooperatives, Gounari St. 4, Patros, Greece.

NOTE — Mr. Serbetis is Director of the Fisheries Service in the Ministry of Industry of Greece, with headquarters in Athens.

Evangelistria III, an Atlantic type trawler of the Greek fishing fleet, measures 227 ft. overall, and compares with the larger European trawlers below the trawler-factory class.

combine fish canning with the processing of vegetables.

In addition to the methods already mentioned, small quantities of smoked mullet, eels and fish roe are prepared.

● In pre-war times the per capita consumption of fish in Greece was 6.6 kg. (14.5 lbs.) In 1958 the per capita consumption had risen to 12. kg. (26.6 lbs.)

● Greek fish imports in 1958 by types of products were:

	Tons
Fresh	3,684
Salted, etc., misc.	4,359
Salted, herring	3,045
Cod, salted	12,827

The fresh fish came principally from Turkey, the conserved fish from the United States, Portugal and the Netherlands; and the salt cod from Denmark, Iceland, Norway and Greenland.

Export trade in fish from Greece is small, amounting in recent years to:

Year	Tons Fresh	Tons Salted and Conserved
1955	148	467
1956	427	154
1957	215	778
1958	693	297

Breakdown of the Greek consumption of fish for 1958, based on 80,000 tons of domestic production, plus 24,000 tons of imports, minus 1,000 tons of exports, and counting 8,500,000 inhabitants, gives:

Use	*Metric tons*
Fresh	70,000
Frozen	6,000
Conserved	5,000
Salted	22,000
	103,000

Improved road system, with increased facilities for refrigeration on fishing vessels and in shops, makes the utilization of fish in Greece wider and gives its brighter aspects. In addition, construction of special establishments for packing, safe preservation and transportation of fish to six ports and distribution centers in the Greek islands moves toward completion.

PANAMA

● Panama moved vigorously in 1959 in an effort to reverse the decline which characterized its shrimp industry through 1958 and the early months of the following year.

The extraordinary growth of the Panamanian shrimp industry from 1956 through 1957 came to a sharp check with decline alike in catch and selling prices. The earlier results had been so promising, and the potential continued to register so favorably, that the government and businessmen of Panama felt confident the industry could again be restored to stability and soundness, albeit at a more restrained and less speculative level than that which had characterized the Bonanza period.

Actually the shrimp production of Panama in the short period of its industrial status had come to account for 27% of the national exports by value, ranking second in foreign trade only to bananas.

● In July, 1959, the Government of Panama established regulations for fishing and the export of fishery products. Both the Government and shrimp industry (valued at US$8.5 million) have re-examined policies and practices in the hope of assuring the continued development of the shrimp resources as a profitable enterprise. During the first seven months of 1959 catches of white shrimp continued spotty, but were better than during the similar period of 1958.

All Panamanian shrimp trawlers were fishing in Panama waters during the first seven months of this year. Due to the drop in shrimp prices in the United States market, however, prices paid the shrimp vessel owners and crews were cut.

One of the largest shrimp processing companies has installed a mechanical shrimp peeler and has also absorbed several smaller plants.

This mechanical shrimp peeling equipment may prove the answer to a pressing economic problem: How to prepare the tiny shrimp caught in some abundance at a cost level which will permit it to be sold in export.

Late in 1959 the Panama shrimp packing firms numbered seven. Catches of shrimp were reported as only about one-third as great as a year before for the amount of fishing effort expended.

These discouraging conditions resulted in an exodus of fishing vessels, a number of them going to other countries, with several being shipped to Iran to undertake development of a shrimp fishery on the Persian Gulf.

WEST GERMANY

By DR. GERHARD MESECK

- Among the fishery nations of the world the Federal Republic of Germany takes the 9th, and in Europe the 3rd place. The fishing industry includes about 20,000 enterprises with about 110,000 employed persons. The annual turnover amounts to approximately 3 billion DM, and this is only a little below the turnover of the baking industry in the Federal Republic. Owing to the knowledge of natural science and to the progress in technique, the German sea fisheries expanded their activity to more distant waters since the beginning of the last century. The coastal fishery gradually lost its importance, whereas the deep sea fishery began to play the main part. At present, all fishing grounds in the Northeast and Northwest Atlantic are sought for by German fishing vessels. The limits of these areas reach from Spitzbergen to Newfoundland.

The catches of the sea fisheries of the German Reich, amounting in 1900 to about 30,000 tons, increased to 720,000 tons in 1938, and the catches produced by the fishing industry of the Federal Republic of Germany were between about 525,000 tons and about 775,000 tons per annum in the years of 1950 to 1958. It might be expected that, by developing additional fishing grounds, an increase to about 1 million tons per annum might be attained within the next 10 years.

- The most important fishing area is, even today, the *North Sea,* which accounts for almost 50% of the landings. The waters around Iceland, producing over 16% of the landings, are another large fishing area. The other landings come from various fishing grounds, of which waters the Norwegian coast and Greenland may specially be mentioned. The German fishing fleet is also sailing to a number of less prolific grounds, in order to provide the market with a uniform supply of certain species of fish. The seasonal fluctuation of the fishing yields in the Federal Republic, however, is yet rather considerable. There are two

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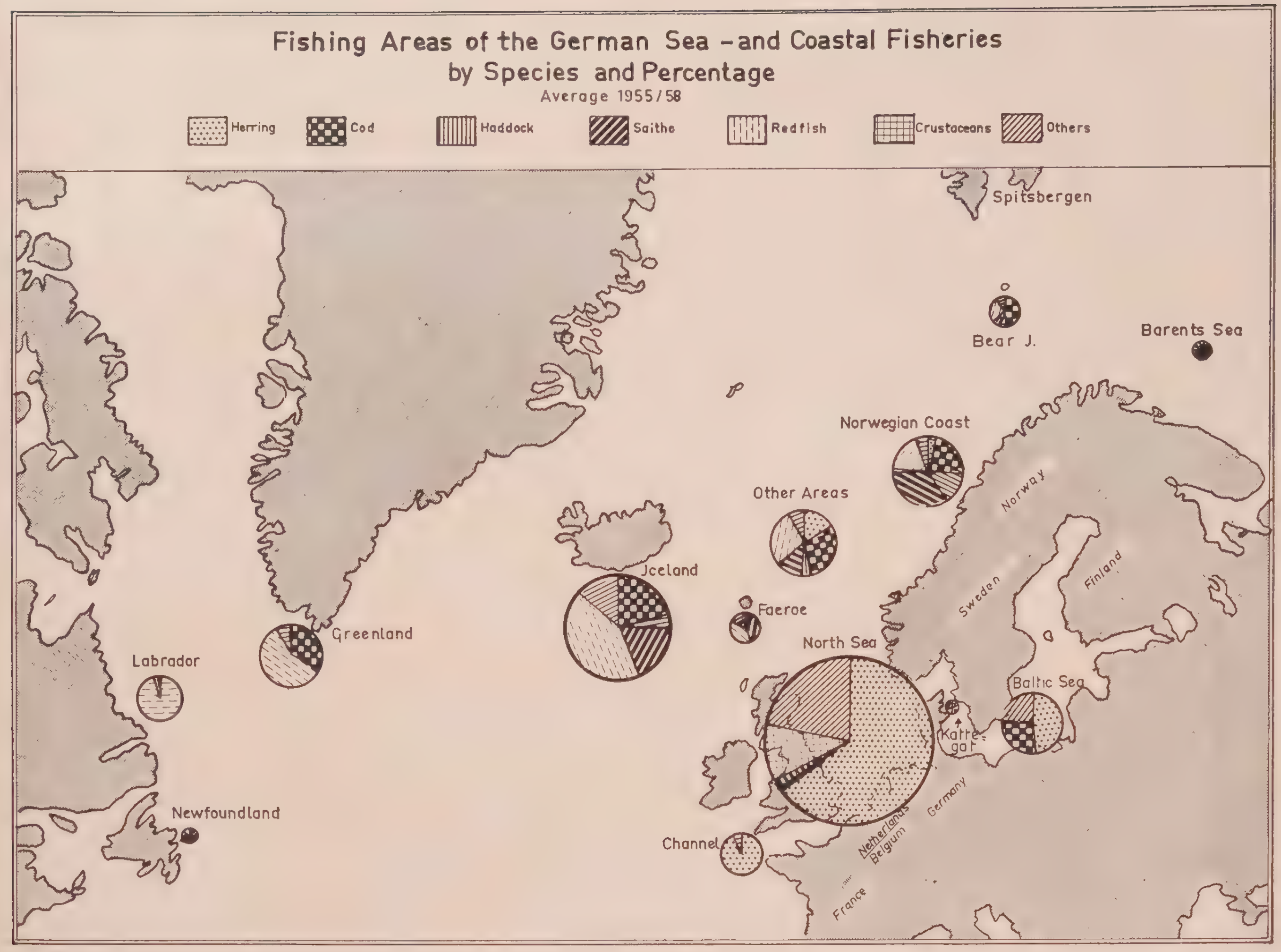
DR. MESECK is Assistant Under Secretary, Head of the Department of Fisheries, Federal Ministry of Food, Agriculture and Forestry, Federal Republic of Germany, Bonn/Hamburg, Germany.

German Diesel-Electric Trawler, 206′ in length, 825 gross tons, 372 net; main engine, Klockner-Humboldt-Deutz, 1,250 hp.; auxiliary, 310 hp. Equipped for freezing and fish reduction. Instrumentation includes: code radio, radiophone, echo sounder-recorder, "Fischlupe", two radar sets, gyro compass, automatic rudder, course recorder.



peaks in the landings, almost regularly in March and August. Whilst from the beginning of the year until March the groundfish landings increase, the herring catches, having great importance as raw material for the fish processing industry, constantly increase from the end of July through August, again decreasing until the end of the year. The general situation is that there exists a surplus of groundfish from home landings during the first six months, but a considerable demand for additional supplies during the second half of the year, which can only be met partly by imports from other fishing nations.

Table 1
Total Landings of the Sea and Coastal Fisheries 1950-1958
(Thousand metric tons)

Year	German ports	Foreign ports	Total
1950	525	. .	525
1951	654	15	669
1952	638	20	658
1953	708	20	728
1954	657	12	669
1955	751	23	774
1956	695	16	711
1957	686	23	709
1958	651	16	667
Ave. 1950/58	663	18	679

With herring the conditions are vice versa. In the first six months the demand of the processing industry must be covered by considerable herring imports, mainly from the Scandinavian countries, as only in the second half of the year sufficient supplies are available from domestic sources.

Composition of the fishing yield in the Federal Republic by species of fish shows that herring accounts for the main percentage. It is chiefly caught during the second half of the

German Fishing Fleet

AVERAGE 1955/58

	Number	GRT	Average Size in GRT	Average Age	Average No. of Crew	Metric Tons		
						Average Landings (Foreign ports included) 1955/58	Average Productivity 1955/58 Per	
							GRT	Fisherman
Trawlers	209	113036	540, 8	8, 1	4596	484403	4, 3	105, 4
Luggers	103	22985	223, 0	19, 1	1865	70234	3, 1	37, 7
Motor-cutters	1455	32029	22, 0	----	3823	160741	4, 7	30, 6
Coastal Fishing Craft	1660	abt. 1950	1, 2	----	1435			
Average 1955/58	3427	170000	---	----	11719	715378	4, 2	60, 1

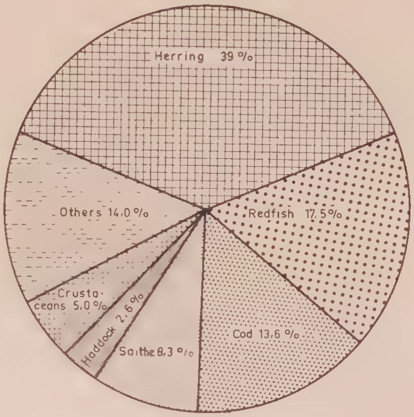
Gas Turbine Stern Trawler of the German long-range fleet—Length 218′, tonnage 720 gross, 257 net; power two free-piston gas turbines generating 2,000 hp. Factory equipment includes heading, filleting, skinning machines, one each; plate freezer, sharp freezer, frozen storage hold; fish reduction plant and meal grinder.

year in the North Sea and in the English Channel. Due to this fact, the North Sea still is of the greatest importance for the fish production of the Federal Republic. It cannot be judged for the time being how this situation will change within the next few years; but efforts are made also to extend the herring fishery to other sea areas. This is related to the fluctuating herring catches in the North Sea as well as to the increasing demand of the German herring processing industry. The decrease in the fishing yields in the recent years is, first of all, due to reduced herring catches, for which biological and hydrographic changes were the most essential reasons.

● In view of the increasing importance of fisheries for the nutrition of mankind with biologically high quality protein, the Federal Republic of Germany, though having a relatively short coast line, is also interested in extending her fisheries. This means intensifying and rationalizing the fisheries in the fairly near sea areas as well as on distant fishing grounds. Research and development of new fishing areas are, therefore, also financially assisted by the Federal Republic. First of all, this refers to the trawl fishery in greater depths, and to an increased pelagic fishery in deep sea areas. In this connection one is also specially concerned with the improvement of the fishing technique.

Landings of the Sea and Coastal Fisheries by the most Important Species

Average 1955/58 Percentage



The German Fishing Fleet

● The fishing fleet of the Federal Republic of Germany consists at present of more than 3,400 units with a total of about 170,000 gross registered tons. One distinguishes four types of fishing vessels, namely, trawlers, luggers (drifters), deep sea cutters and coastal fishing craft.

The trawler fleet accounts for the main percentage of the fish production. Except for the Baltic, the trawler fleet operates in all fishing areas of German sea fisheries. Apart from the North Sea herring season from July to October, however, the main operations take place on distant grounds. The trawler fleet is registered in the four large fishing ports of the Federal Republic: Bremerhaven, Cuxhaven, Hamburg and Kiel. Bremerhaven is the greatest fishing port.

● The lugger fleet registered in the ports of Emden, Leer, Bremen-Vegesack and Gluckstadt conducts, almost exclusively, herring fishing with drift and drag nets in the North Sea, in the English Channel and, in recent years, increasingly off the Norwegian west coast. The greatest part of the catch is processed into salted herring on board the vessels.

The deep sea motor cutters, exclusively owned by individual owners, are operating predominantly in the North Sea and in the English Channel, but also in the Baltic. They are fishing for groundfish, herring, tuna (small quantities) and salmon (only in the Baltic).

Coastal fishery is carried out with small craft in the North Sea and in the Baltic, usually near the coast. In summer a great number of these craft are fishing for shrimp.

German Trawler Fleet by Types and Propulsion

	Coal-Burning		Oil-Burning				Motors				TOTAL	
					Thereof with Gas Turbine				Thereof with Diesel Electric			
	No.	GRT	No.	GRT	No.	GRT	No.	GRT	No.	GRT	No.	GRT
Bremerhaven	81	42.869	19	12.642	3	2.027	15	9.836	5	3.158	115	65.347
Cuxhaven	38	19.453	5	3.249	--	---	4	2.061	2	1.169	47	24.763
Hamburg	24	11.935	4	2.715	-	-	8	4.873	2	1.417	36	19.523
Kiel	3	1.180	7	3.735	---	---	4	2.569	---	---	14	7.484
TOTAL	146	75.437	35	22.341	3	2.027	31	19.339	9	5.744	212*	117.117

*Includes 4 combined catching and factory vessels, totalling 3,060 GRT; 3 vessels of 2,400 GRT total, equipped with fish reduction and refrigeration facilities; and 13 with fish reduction facilities, 9,533 GRT.

WEST GERMANY

Dr. Gerhard Meseck, Director of Fisheries in the Federated Republic of Germany, and author of the accompanying article.

● In recent years, the technical improvement of the fishing fleet has made more or less great progress in all fields, but the improvements of the trawler fleet are most essential. This refers to the size as well as to the propulsion and to the equipment of the vessels. Moreover, various stages of development towards the factory trawler are indicated. The growing operations on distant fishing grounds require larger and more seaworthy vessels with the greatest possible range. The voyages of conventional trawlers take 20 to 22 days. Of these, 10 to 11 days account for the trips to and from the fishing area. The voyages to Labrador and Newfoundland even need 15 sailing days.

For this reason it is necessary there to employ vessels which can immediately handle and process a part of the catch on board (salting, deep freezing, and production of fish meal from offal). The 212 trawlers in operation already include four factory trawlers, three vessels with deep freezing and fish meal plants and 13 vessels with fish meal plants. These are the largest units of the fleet, some of which are also designed as stern trawlers.

The German deep sea fishing industry is continuously deliberating into which direction the trawler fleet should be developed, for it has been proved that the conventional types do no longer meet the increased requirements. One is specially concerned about the increasing disproportion between the time of fishing and time of sailing. One is therefore more and more interested to design vessels by means of which a more favorable ratio of the sailing and fishing time may be attained. Factory trawlers rather meet these requirements, because with immediate handling and processing of the catch the fishing time can be extended considerably.

The only problem is, that a greater number of and more skilled personnel have to be taken on board. They also require higher wages. In case of fluctuating catches it also happens frequently that the expensive equipment for handling and processing cannot fully be utilized. Many things suggest, therefore, an increased use of stern trawlers. On board these vessels deck hands are saved, who may be employed additionally below deck with the processing of the catch.

Moreover, the catches on board German vessels are often treated by different methods. This is a combination of producing salted fish, frozen fish, iced fresh fish, and fish meal. In this way a more favorable distribution of work can be arranged by means of simultaneously or successively operating processes, and consequently even a greater efficiency of the workers is possible. It seems to be doubtful, however, whether the present factory trawlers are the final solution for exploiting distant fishing grounds. Quite recently, plans have already been developed to operate genuine factory ships with independent fishing vessels delivering the catches to the floating factory. The problem of transferring the catch to the factory ship may be solved by means of an exchangeable codend. Such experiments conducted by the research vessel *Anton Dohrn* have, in principle, been successful.

Concluding may be said that also in the German fishing industry the types of vessel may gradually be more differentiated by their employment on near, middle and distant fishing grounds.

EDITOR'S NOTE — This article is the first of three by Dr. Meseck which Pacific Fisherman has the privilege of publishing. Succeeding articles on German fish distribution and marketing practices and government policy toward fisheries will be published in forthcoming issues.

German Motor "Lugger", intermediate-range craft, 143′ in length, 600 hp. Deutz diesel, 324 gross tons.

PERU

• In the history of the world's fisheries, there have been few if any success stories that can hold a candle to the almost unbelievable record of Peru and her marine industries in the past few years.

In 1958, the latest year for which complete official statistics are available from Peruvian Government sources, Peru's total marine fisheries production was estimated by the national Fish & Game Administration as 900,167.1 metric tons gross. Total figure for 1957 was 453,134.7 m.t. (One metric ton equals 2204.6 lbs.)

This is an increase of 447,032.4 m.t. or 98.6%, according to the Fish & Game Department of Economics and Statistics, headed by Sr. Javier Iparraguirre Cortez.

During the first World Oceanography Congress, New York, September 1959, it was announced that Peru had jumped from 26th place to fifth in tonnage among the world's fishery producing nations, with clear leadership among her Latin-American sister states.

In the early winter of 1959, the government of the republic published a decree modifying restrictions on the expansion of Peru's fishmeal industry and giving "proceed under control" to private enterprise seeking to expand its operations and production.

In publishing the decree, the Government pointed out that studies had shown that the phenomenal growth of the fish-meal industry in Peru in the past three years had shown no signs of fishing out the anchovy resource from which meal is processed. Furthermore, the guano-bird population, which had shrunk drastically because of a couple of bad fishing years, was recovering nicely, and in spite of the recovery and the greater quantity of fish consumed by the birds, the anchovies were still plentiful.

These signs point to continued phenomenal growth of the Peruvian fisheries, especially fish-meal production.

This is Growth

• U.S. Fish & Wildlife Service sources say Peru's exports of fish meal more than doubled in the first six months of 1959 as against January-June 1958, while exports of other leading Peruvian fishery exports had increased less spectacularly.

PERUVIAN FISH EXPORTS
In Metric Tons

Product	January 1959	June 1958
Canned Bonito	7,727	5,849
Fish Meal	123,580	49,803
Frozen Tuna	7,210	3,674
Frozen Skipjack	1,643	983
Sperm Oil	4,031	4,275
Fish Oil	6,926	1,050
TOTAL	151,117	65,634

Note that while total exported tonnage increased by 115% in the first six months of 1959 over the same period in 1958, exports of fish meal shot up by 73,777 metric tons, or 148%. With government encouragement—rather, with a removal of government restrictions—the industry can look for another boom year in 1960.

Peru's exports of fishery products were valued at $20,700,000 (U.S.) for the entire year 1958; and the exports for the first six months of 1959 carried a valuation of almost exactly the same figure—$20,100,000. In other words, Peru exported just about as much fishery products, measured in dollars, in the first six months of 1959 as in the whole year 1958.

The industry looks so prosperous, in fact, that tax-hungry communities are eyeing it as a source of revenue, and it probably won't be long before taxes are slapped on the exported volume of fish meal.

The only question-mark visible in the Peruvian fish-meal situation is the Norwegian herring catch, which has continued subnormal. Originally, Peruvian fish-meal processors moved into the vacuum in the world meal market created by the flop in the Norwegian herring catch. If the Scandinavian crop should recover its former magnitude, Norwegian meal might make sizable inroads into Peru's trade.

Anchovy Meal Leads the Parade

• Anchovies, by the way, accounted in 1958 for 81.9% of Peru's total landings of all species of fish, with 737,019.5 m.t. reported by the Fish & Game Administration. Bonito, Peru's principal canned-fish export, was second with 65,758.3 m.t. or 7.3% of the national total.

Industrial processing accounted for 91.6% of the consumption of Peru's catch in 1958, the term Industrial including canning and freezing as well as processing into meal and oil. Fresh consumption took 6.8% of the catch, and 1.6% was salted.

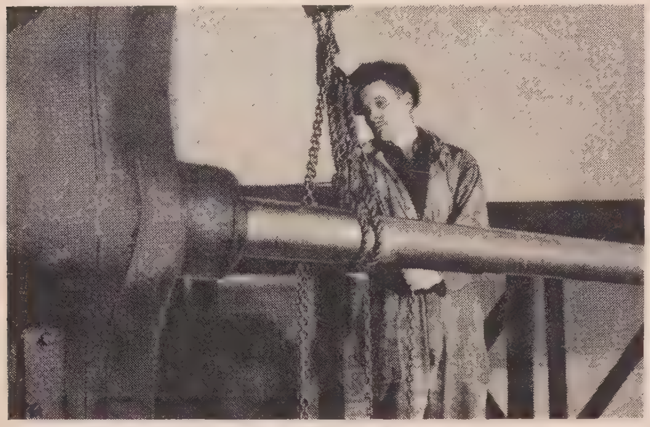
PERUVIAN FISH MEAL PRODUCTION

In Metric Tons

	1958	1957	1956	1955	1954
From whole anchovies	121,021.5	*	22,999.7	11,223.4	8,564.7
From whole machete	2,853.6	*	3,325.9	2,670.9	1,131.1
From fish residues	3,034.3	*	4,643.2	6,174.8	6,839.6
Total	126,909.4	64,479.8	30,968.8	20,069.1	16,535.4

*Breakdowns unavailable.

How to choose a propeller shaft



The shaft you select must be strong and tough to withstand the stresses and shocks encountered at sea. It must be hard and rigid to endure whipping and wear from countless revolutions at fairly high speeds. It must resist salt water corrosion and must be compatible with other metals to check galvanic corrosion. In addition, the shaft you choose must be economical.

There's one material which can give you all of these properties:

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Corrosion resistance. Monel resists the attack of salt, brackish and polluted waters. There's no "dezincification" — no abrasive oxides that cause excessive bearing wear.

Freedom from worry about galvanic corrosion. Monel can be used with any bronzes in sea water.

Rigidity. Monel shafts have greater stiffness to resist whip and vibration. This means less bearing wear — a smoother ride.

Hardness. Smooth, hard Monel shafts give longer bearing life, greater protection against shaft wear.

Economy. Because Monel is truly the Seagoin* metal, its properties and long service life give you the most for your money — save you the expense of frequent haulouts and replacements. You'll be pleasantly surprised to find how little extra Monel shafts cost.

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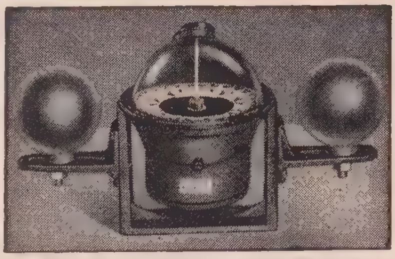

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PERUVIAN CANNED FISH PACKS . . . 1958

(Actual Cases)

BONITO—	
In Oil:	
Quarters	133,963
Halves	905,300
1-Lb.	2,859
4-Lb.	899
In Brine:	
Halves	54,588
1-Lb.	37,788
In Tomato:	
Halves	318
1-Lb.	6,937
TOTAL BONITO	1,142,652
YELLOWFIN—	
In oil, ½s	160
In brine, ½s	8,180
SKIPJACK—	
In oil, ¼s	172
In oil, ½s	2,655
In brine, ½s	9,023
In brine, 1s	40
In brine, 4s	515
TOTAL TUNA	20,745
MACHETE—	
In brine, ½s	425
In brine, 1s	481
Tomato, 1s	47,230
TOTAL MACHETE	48,136
ANCHOVY in oil, ¼s	305
GRAND TOTAL	1,211,838

Peru just about doubled its production of fish meal in 1958 over 1957, which in turn was more than double 1956 production.

The carryover from 1957 to 1958 was 11,647.2 metric tons, as against a slim 1199.6 the year previous. Total exports of fish meal for 1958 were 105,776.6 m.t., while Peru herself consumed 10,685.2 m.t.

While the U.S.A. was a good customer, taking 26.2% of Peruvian fishmeal exports, The Netherlands was a better one, buying 31.1% of the exported product.

PERU FISH MEAL EXPORTS
1958

Destination	Metric Tons	% of Total
Netherlands	32,926	31.1
U.S.A.	27,751	26.2
W. Germany	26,650	25.2
U. K.	10,810	10.8
Belgium	5,165	4.9
Mexico	1,871	1.8
Venezuela	601	0.6

Oil Business: Good

- Fish oil production was up 33.9% in 1958 over 1957, according to the Fish & Game Administration, 1958 production totaling 10,271.2 m.t., value of which was set at 15,000,000 gold soles ($545,450).

This was an increase of 2602.1 m.t. or 33.9% over 1957.

This is one commodity of which Peru consumed by far the greater proportion, using 6,811.9 m.t., while exports amounted to only 1,643.3 m.t. Again The Netherlands was the best customer, taking 34% of the exported oil. These fish oil figures do not include whale oil.

PERU FISH OIL EXPORTS
1958

Destinations	Metric Tons	% of Total
Netherlands	559	34.0
Italy	545	33.2
W. Germany	537	32.7
Ecuador	1	0.1

As in the case of fish meal, the industry was left in 1959 with a considerably greater carryover than the previous year. Stock at the beginning of 1959 was 2,042.5 m.t. as against 226.5 m.t. in 1958.

Freezing Recovers

- The freezing industry, which took a temporary loss in 1957 when its total production dropped to 11,822 m.t., recovered strongly and scored its biggest year since 1954, which is as far as available statistics go back. Total 1958 production was 17,731.7 m.t., of which 16,577 was exported and 35.8 consumed within the Republic, leaving a carryover of 1,425.3 m.t. for 1959.

Among the varieties of fish frozen, Skipjack was the consistent leader, accounting for 12,573.2 m.t. of 1958 production.

In 1958 Peruvian frozen fish production was confined largely to tuna, with Skipjack accounting for 12,573 metric tons and Yellowfin 4,594 metric tons. Swordfish freezing totalled 333.4 metric tons and lobster tails 231 metric tons.

Of the total production, 16,577 metric tons were exported, *with 16,538.4 tons going to the United States.* Italy, with 39 tons, was the only other export market for Peruvian frozen fish in that year.

The Fresh Market

- Fresh market fish accounted for only 6.8% of the total tonnage of fish taken out of the ocean by Peruvian fishermen. But the consumption of fresh fish in Peru was up 22.5% over 1957, and the rise has been steep and steady for the past four years. This indicates not only prosperity for Peruvian fishermen, but a notable improvement in the diet of Peruvians generally, and thereby a great benefit for the people of Peru.

The phenomenal development of Peru's fish-meal, canning and freezing industries can be seen from the fact that in 1955, 24.3% of the catch was consumed as fresh fish—the tonnage was 35,551.2 m.t.—but in 1958, although fresh fish consumption had increased by 73%, fresh fish accounted for only 6.8% of the total utilization.

According to the report of the Peruvian Fish & Game Administration, Greater Lima (pop. 1,450,000) consumed 38.5% or 23,656.3 m.t. of the total fresh fish. This was an increase of 49.2 over 1957, and a per capita consumption of 16.3 kilograms or 7.4 lbs., several times the US per capita figure.

Besides fresh fish, Peruvians also consumed appreciable quantities of fish in other forms:

PERU FISH CONSUMPTION
1958

	Metric Tons
Fresh fish	61,498.5
Salted fish	7,267.0
Frozen fish	35.8
Canned fish	4,409.9
Imported	570.6
TOTAL	73,781.8

Bonito was the leading variety of fresh fish consumed in Peru.

Canned Pack Down

- The canning branch of the industry is the one activity that took a volume loss in Peru in 1958 under 1957.

In tons, the quantity packed in 1958 was 15,907.7 m.t., down 7,925.3 m.t. from the 1957 pack of 23,833.0. The Fish & Game Administration attributes this loss to competition from Japanese canned fish, while other well-informed sources say it is due to decreased purchases of Peruvian canned Bonito by the United Kingdom. U. K. purchases have been an unpredictable factor which has always had a strong effect on sales and production of Peruvian Bonito.

PERU CANNED PACK

	1958
Bonito	14,421.4
Machete	1,218.9
Yellowfin	101.0
Other Tuna	161.5
Anchovy	4.9
TOTAL	15,907.7

With a revival of British buying, the trade expected that the 1959 statistics, when they become available, will show an improvement in the volume packed.

Exports of canned fish in 1958 amounted to 13,321.0 m. t., which brought 123,888,242 soles of new wealth into the country ($4,502,177 US).

PERU CANNED FISH EXPORT TRADE

	Metric Tons 1958	% of Total
United States	7,204.2	54.1%
Great Britain	2,720.2	20.4%
Canada	956.8	7.2%
West Germany	620.9	4.7%
Belgium	487.6	3.7%
Netherlands	420.5	3.1%
Italy	364.9	2.7%
Switzerland	145.3	1.1%
Other Nations	400.6	3.0%
Total	13,321.0	

In preparing this review and the statistical tables included, *Pacific Fisherman* gratefully acknowledges the aid of Sr. Javier Iparraguirre Cortez, Chief of the Department of Economics and Statistics of the Fish & Game Administration, an agency of the Ministry of Agriculture of the Republic of Peru; also to the managements and executives of fishery, cannery and sales firms in Peru, whose excellent statistics and wise interpretations of the figures, were a great help.

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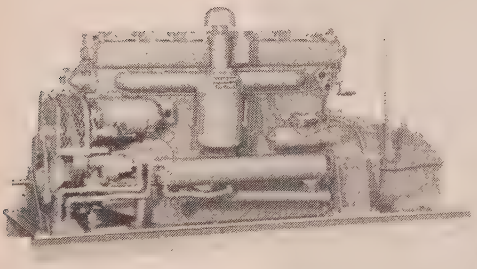

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SOUTH AFRICA

By PETER HJUL

● Setting a new record for the second successive year, the fishing industry of the Union of South Africa in 1959 caught and processed an estimated 489,000 short tons of fish. This catch — 53,000 tons above the previous record total in 1958 and more than eight times the 60,000 tons landed in 1938 — was brought to the jetties of some 30 processing factories and distribution depots by a fleet of 200 large pelagic shoal fishing and rock lobster boats, 45 steam and motor-powered bottom trawlers, and some 250 smaller line and rock lobster fishing craft.

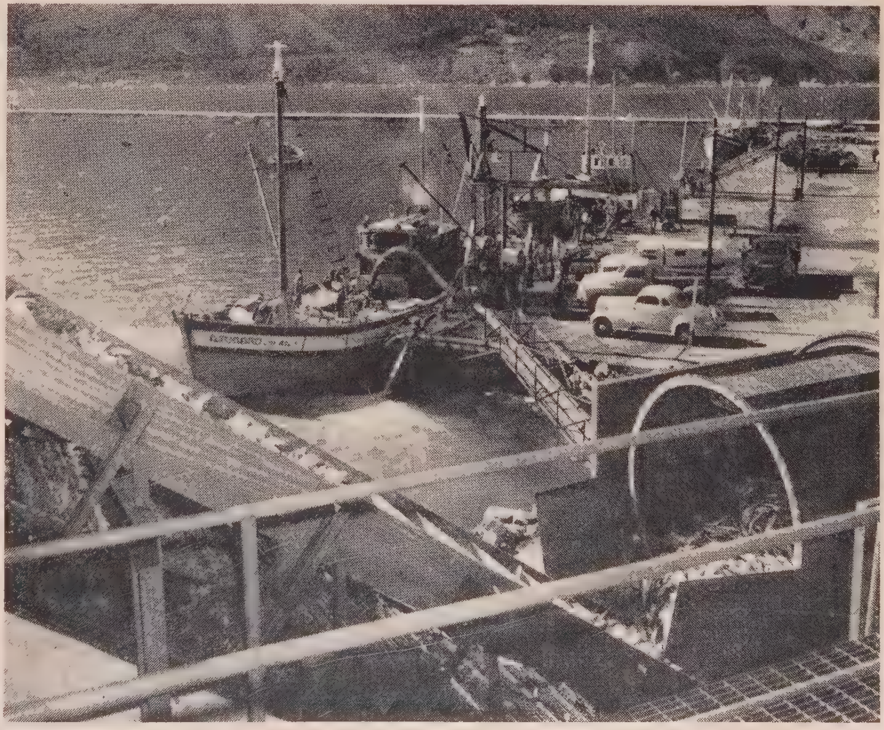
These vessels operated along the 2,000 mile coastline of the Union, but over 95% of their activity was concentrated in the cold waters of the Benguela current, from the area of Cape Point north to the Orange River mouth.

Sweeping north from the Antarctic drift, this current touches Africa near its southernmost tip and is deflected in a north-northwest direction along and slightly away from the coasts of the Western Cape, South West Africa and Angola. This movement, aided by the winds, causes a rich upwelling of cold, nutrient waters and produces one of the greatest marine pastures in the Southern Hemisphere.

The fisheries of the Southern African region, isolated in pockets along the West Coast, contribute more than 1,000,000 tons each year to the world's catch. Their intensive development dates back less than 20 years for South Africa and only 10 years for South West Africa and Angola.

● Because of the links between the Union and South West Africa, there is a tendency to regard the fisheries of these two countries as one unit. There is in fact close liaison between them. The resource research organizations of the Union Government and the South West Africa Administration are collaborating in an extensive pilchard research program. The industries in both territories draw on the product and process research services of the Fishing Industry Research Institute. The marketing of fish meal, fish body oil, canned rock lobster and frozen rock lobster tails is coordinated by single organizations; and several of the producing companies are associated. But the fisheries of South and South West Africa remain separate industries. They are subject to different conservation measures and, although there has been considerable cooperation, each has developed on its own.

This development in South Africa can be divided into four stages—(1) a gradual increase in the catch and fishing effort over a period of several decades until the last war; (2) the first large-scale exploitation, during the war, of the pelagic shoal fish in West Coast waters; (3) the post-war boom in the new inshore fishery when the catch rose from 7,500 tons in 1943 to 300,560 tons in 1952; (4) consolidation of the inshore fishing



Fish discharge system at South Africa's newest fish reduction factory. Boats are discharged at the rate of 65 tons per hour by pump through a 10" line to a dewatering reel. Pits have 500-tons capacity.

Typical South African fishing vessel, 63 by 21′, with hold capacity of 110 tons, plus deckload of 20 to 30 tons. She is powered with a Burmeister & Wain Alpha engine of 165 hp. Such craft carry eight or nine men and may run 100 miles for their catch. Cost with synthetic net, radiophone, echo sounder and radio d.f. approximates $56,000.

and bottom trawling industries accompanied by huge improvements in marketing methods, in processing and in the quality of the final product.

- Of the three West Coast fisheries, South Africa's is the most intensively developed and the most diversified. Although the pelagic shoal fish — the pilchard (*Sardinops ocellata*), the maasbanker (*Trachurus trachurus*) and the mackerel (*Scomber japonicus*) —comprised 342,753 tons of the 1959 catch, trawling (an estimated 110,000 tons) also contributed a large share. Smaller, but very important parts were also played by the rock lobster industry and by line fishermen operating in small diesel-powered boats from fishing harbours along 2,000 miles of coast.

The pelagic shoal fishery, producing canned fish, fish meal and fish body oil, is located along 200 miles of coast from Lambert's Bay in the north past Cape Town to False Bay, where the bulk of the 1959 catch was made. Fourteen large canneries and fish meal factories of this fishery are served by a fleet of 150 boats which operate up to 50 miles offshore but make most of their catches within 25 miles of the coast.

- In the 16-year history of the industry there has been a spectacular increase in the average size of the shoal fishing boat. In 1945/46 the catch was brought in by wooden boats 40 to 45′ long, crewed by eight or nine men and costing under £7,000 to build and engine. The average pilchard boat is now 65′ to 69′ long, has a beam of 22′ and can carry 140 tons of fish in the hold and on deck. Boats of this type, with engine and deckhouse aft, may travel for 12 hours in search of fish, and find it with the aid of an echo sounder. They use a synthetic fibre net 120 fathoms long and up to 25 fathoms deep and the completed cost of boat, engine, electronic equipment and net is over £20,000. To meet the need for increasing boat capacity, a South African naval architect has designed a steel boat nearly 70′ long with the engine placed near the transom stern almost immediately over the propeller. A chain drive placed at the forward end of the engine acts on the reduction gear and shaft below the engine room. With this and other innovations, the boat will have a capacity of just over 200 tons. The first of these boats was laid down late in 1959.

- The factories served by the fishing fleet were once modelled closely on the pilchard processing factories of California. American fishery engineers came out to assist in their construction and in the installation of American plant. But, for the past five or six years, South African engineers have been introducing their own modifications. In the average modern factory the earlier American plant may be seen working alongside plants from Germany, Denmark or Norway and most of the latest machinery has been manufactured in South Africa. The industry, first patterned after older industries in the Northern Hemisphere, is today making its own important contribution to the improvement of fish processing technology.

That it is able to do so is due largely to an organization set up in 1947 as a joint venture by the fishing industry and the Government-sponsored Council for Scientific and Industrial Research. The Fishing Industry Research Institute has worked for twelve years to improve the products and the processing methods of the industry. It is housed today in modern laboratories built in Cape Town in 1957 at a cost of nearly £200,000 and it maintains field stations on the Cape West Coast and in South West Africa.

Among the achievements of F.I.R.I. are (1) the introduction in 1953 of the first pilot plants for the processing of

Union of South African Fish Catch

(Landed Weight in Short Tons)

	1938	1948	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959
Shoal Fish	...	82,000	150,223	220,902	300,560	251,327	234,664	243,889	170,316	219,615	298,854	342,753
Mackerel	...	...	...	...	...	7,200	8,100	22,580	35,927	7,873	22,131	36,473
Maasbanker	...	27,000	55,140	111,292	113,136	93,140	130,228	86,885	50,233	93,218	62,190	19,484
Pilchard	...	55,000	95,093	109,610	187,424	150,987	97,336	134,424	84,156	118,524	214,533	286,796
Trawled Fish	20,066	46,610	64,383	77,579	72,708	81,785	90,893	95,050	98,913	99,964	103,441	110,000*
Snoek	7,500	12,000	14,000	15,000	14,000	14,000	14,500	15,000	10,000	10,000	8,000	10,000*
Rock Lobster	11,000	12,000	14,000	15,000	15,000	15,000	13,500	13,500	12,000	10,000	5,000*	6,000*
Miscellaneous Fish	22,000	25,000	26,000	25,000	25,000	26,400	27,800	22,300	20,200	20,300	20,600*	20,600*
Abalone	...	...	...	...	...	400	800	300	200	300	100*	100*
Shark, etc.	...	2,000	1,000	...	...	500	1,000	1,000	1,500	2,000	2,500*	2,500*
Other Fish	22,000	23,000	25,000	25,000	25,000	25,000	26,000	21,000	18,500	18,000	18,000*	18,000*
Total	60,566	177,610	268,606	353,481	427,268	388,512	382,357	389,739	311,429	359,879	435,895	488,753

*Estimated

stickwater from the fish meal factories; (2) the virtual elimination of the danger of spontaneous combustion in Southern African bagged fish meal exports; (3) the setting-up of the first standards controls over South African canned fish (this work was later taken over on an industry scale by the South African Bureau of Standards); and (4) the development of the only economic commercial process for the production of edible fish flour from pilchard and maasbanker meal.

• Despite its large fish catch South Africa has not yet become a fish-eating nation. Intensive publicity efforts, particularly by the trawling industry, have boosted local consumption, but this, at a yearly average of 12 lb. a head, is one of the lowest in the world. As a result the Union is a fish exporter out of all proportion to the size of its catch and two-thirds at least of its yearly production of canned fish, fish meal, fish body oil, canned and frozen rock lobster tails, and dried and salted fish is sold to markets elsewhere.

This need to develop world markets has contributed both to the improvement in the quality of South African fish products, and also to the establishment of large and very efficient export marketing organizations.

Two such organizations, whose methods were closely studied by world fish meal producers at an international conference in Cape Town in 1958, are the S. A. Fish Meal Producers' Association and the S. A. Fish Oil Producers' Association. These two bodies, representing individual manufacturers in the Union and South West Africa, dispose of the entire production of meal and oil. This, in 1959, amounted to 130,000 tons of meal and more than 25,000 tons of oil, of which 100,000 tons of meal and most of the oil was available for export.

• The rapid increase in the shoal fish catch from 1943 to 1952 aroused a considerable fear of overfishing among South African fishery scientists.

Resource research in the Union is undertaken by the Division of Fisheries which in 1950 started a long-term pilchard research program using the new 882-ton trawler-type vessel *Africana II* and two smaller craft. In consultation with the industry this organization also steadily restricted the shoal fishing effort. At first an embargo was placed on the number and then on the capacity of processing factories, then a short closed season was introduced, and in 1953 the yearly catch of pilchards and maasbanker was limited to 250,000 tons. A later alteration in this catch limitation enables the industry to continue fishing to August even if the limit is exceeded.

The Division of Fisheries, with financial assistance from the industry, has now intensified its investigations into the pilchard resource and, in collaboration with South West Africa, has six modern vessels engaged in its research program.

• The trawling industry has Cape Town as its main base but also operates from Mossel Bay and Port Elizabeth. Three main trawling grounds are worked—one south of Cape Agulhas and two off the Cape West Coast. Established at the beginning of the century, this industry has built up a distribution system throughout South Africa and the Rhodesias. Fast fish trains leave daily from Cape Town for the north and fresh fish is distributed through twenty depots located in the main centers of Southern Africa.

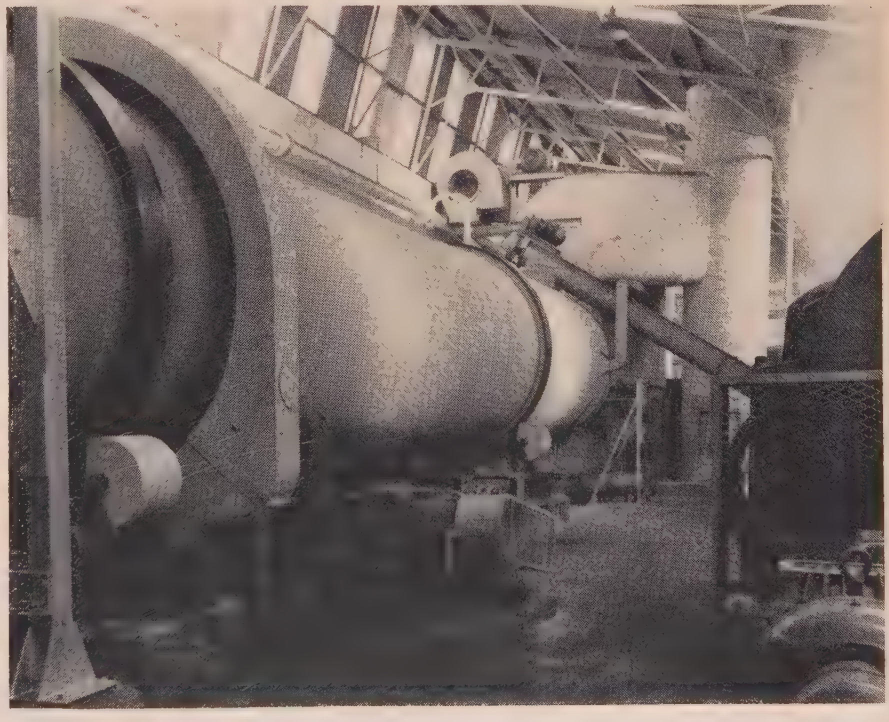
Since 1953, the industry has had eight new steam trawlers built in British shipyards and a diesel-powered trawler, the first large ship of this type to be ordered for South Africa, has just been launched. In addition, the industry has taken delivery in recent years of eight small, 75-ton motor trawlers, six of them built in Cape Town.

But the most interesting development in the trawling industry has been the increase of ancillary processing activities. Shortly before the war a white fish meal factory was opened in Cape Town docks to process the offal from fish headed and gutted aboard the trawlers. Another factory was opened to extract and process Vitamin A oil from the livers of the hake which makes up the bulk of the trawler catch.

Choice fish surplus to that required for local and inland distribution has for years been sent to a large smokery which has a flourishing export trade to Australia. The growth of the quick-freezing industry has also provided an outlet for trawled fish. At a factory just outside Cape Town, the largest of its type in the country, production of frozen fillets has been doubled and trebled over the past four years.

Yet another outlet has been found in the fish drying business. At a factory about eight miles out of Cape Town dried and salted trawled fish is prepared for export to the Belgian Congo, West Africa and to other African territories.

In 1939 fishing was one of the smallest of South African industries representing an investment of under £2,000,000. Twenty years later the investment in fishing has increased tenfold and more. It has become one of the largest of the Union's food-producing industries, supporting some 40,000 fishermen, factory and distributive workers and their dependents. It is a healthy industry, soundly based on private enterprise, distributing its products at competitive prices and quality to markets throughout the world.



Largest Africa-built dryer is this 70 by 8.25′ rotary installed in the new Hout Bay fish reduction factory of Da Gama Visbedryf. It is direct heat type, using flue gases from three Lancashire-type boilers.

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PHILIPPINES

By HERACLIO R. MONTALBAN

● Fish is among the most important natural resources of the Philippines, and is the principal source of the animal protein food of 23,122,200 Filipinos, a fish and rice eating people.

Fishing is one of the main occupations of the people and ranks third among the basic industries of the Philippines, after farming and livestock raising in point of usefulness, value and in the number of people supported.

The estimated production of fish in the Philippines for the year 1958 amounted to 426,666 metric tons. Eighty-six per cent (86%) of this quantity was landed from marine fisheries by 1,426 commercial fishing vessels of over three tons gross and by thousands of municipal and subsistence fishing crafts. The remaining 14% of the total production consisted of milkfish, *Chanos chanos*, raised from 116,546 hectares of estuarine fishponds.

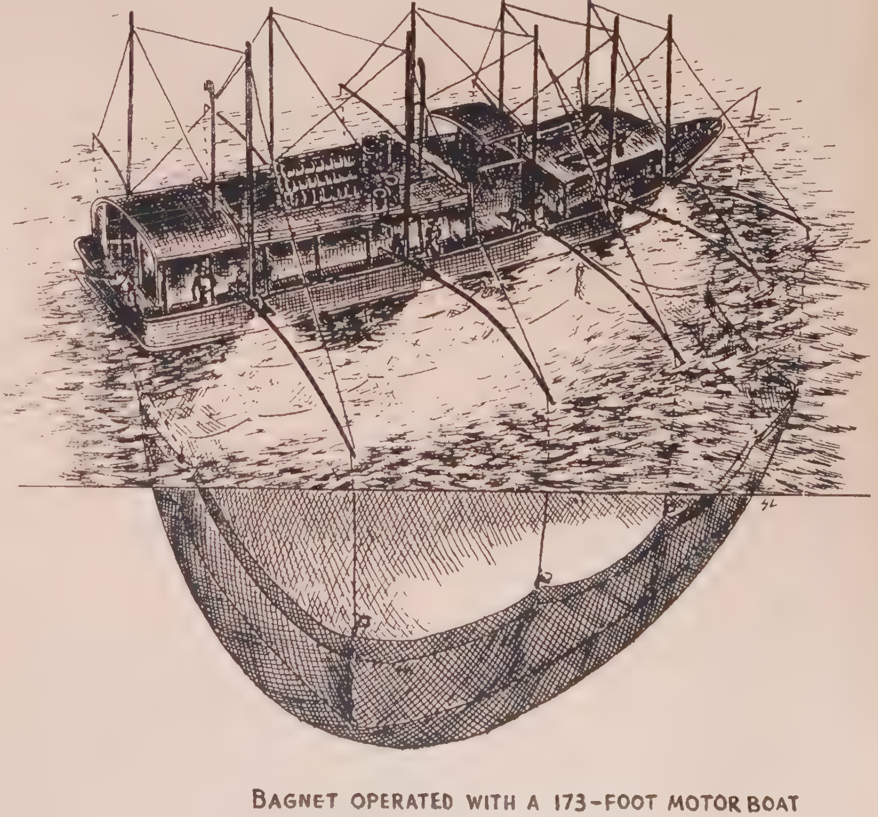
Other marine products of great commercial importance are the sea cucumbers, pearl and button shells, windowpane shells, sponges and sharks.

● Fish requirement for 1958 was 590,772 tons, based on the per capita normal requirement of 25.55 kilograms (56 lbs.) per annum as established by the National Research Council of the Philippines in 1949. With a population of 23,122,200, fish consumption fell short of the goal by 102,471 metric tons. Production was supplemented by an importation of canned marine products to an all time high figure of 61,742 metric tons, 21 per cent of which was imported from the United States.

Exportation of fishery products from the Philippines, consisting mainly of wet-salted fish, shell buttons and ornamental shells, amounted only to 671,000 kilograms.

For purposes of management and administration of the National waters, marine fisheries is classified into (1) insular fisheries, which refers to fishing vessels operating within the territorial waters, powered or non-powered, with tonnage over 3 tons gross; (2)

NOTE—Mr. Montalban is Director of Fisheries in the Department of Agricultural Resources, Republic of the Philippines.



The **basnig** (bagnet), a fishing gear invented by the Filipinos, is one of the most popular fishing methods used to catch pelagic species and accounts for 40% of the fish landed from insular (marine) fisheries.

The gear is made of finely meshed nettings. Its size depends upon the size of the vessel and the length of the bamboo poles extending from the sides of the vessel to which the net is hung.

When operated it simulates an inverted mosquito net. Used at night with the aid of light, it is carefully spread under the vessel and then lifted to impound the school of fish attracted by the incandescent lamps.

BAGNET OPERATED WITH A 173-FOOT MOTOR BOAT

Philippines Fish Production

(TONS AND THOUSAND PESOS 1/)

Year	Commercial Fishing Vessels		Fishponds		Municipal Fisheries and Sustenance Fishing		Totals	
	Quantity Tons	Value Pesos	Quantity Tons	Value Pesos	Quantity Tons	Value Pesos	Quantity Tons	Value Pesos
1947	63,028	124,795	20,789	25,154	167,633	249,773	251,450	399,722
1948	41,995	41,995	23,031	23,952	130,052	97,509	195,078	163,456
1949	54,827	50,268	24,508	39,703	158,669	206,895	238,004	296,866
1950	47,933	44,098	25,464	33,103	146,793	137,986	220,190	215,187
1951	69,027	49,167	29,669	38,570	197,393	195,419	296,089	283,156
1952	73,315	53,520	31,038	40,039	208,707	204,532	313,060	298,091
1953	72,888	55,719	33,472	43,513	199,266	195,281	305,626	294,513
1954	103,220	70,190	35,034	43,793	205,371	184,833	343,625	298,816
1955	107,210	75,047	36,733	45,917	218,983	201,465	362,926	322,429
1956	106,659	70,815	38,480	49,639	248,509	228,628	393,648	349,082
1957	93,948	68,582	39,414	63,456	253,808	233,503	387,170	365,541
1958	111,877	78,314	57,624	91,046	257,165	236,592	426,666	405,952

1/ = 2 pesos = 1 $U.S.

municipal and sustenance fisheries, which includes fishing craft of 3 tons gross or below, operating within the Philippine waters.

Insular fisheries is confined to the coastal and territorial waters of the country while off-shore and deep-sea fish resources particularly the tuna fishery in areas surrounding the Philippines are practically untapped. This situation of the fisheries could best be explained in the light of existing conditions.

Insular Fisheries

● The extent of the insular fisheries may be gleaned from the number of commercial fishing vessels and type of craft (Table II). The size and construction of the fishing vessels fall within the tonnage range of from 50 to 100 metric tons gross, and about 26% are provided with holds where fish caught are iced.

The Philippine bagnet which accounts for about 40% of the catch from insular fisheries is similarly operated with the use of lights during dark nights. Unmechanized, it requires also a big crew.

The Philippine trawl, a modification of the Pacific or West Coast type, as is more commonly known in the United States, is confined within the trawl grounds located in the coastal waters of the country. Lack of oceanographic, hydrographic and biological information regarding new fishing areas has limited the range of operation of fishing vessels in general. The fishermen, whether it has to do with the introduction of effective fishing gear, improvement on the local gear or craft, or development of new grounds, and so forth, look up to the government for incentives and assistance.

The Bureau of Fisheries has occasionally sponsored demonstrations on operation of Japanese fishing gear, modern fishing appliances, e.g. fish finder, depth sounder, and the most recent is a demonstration of the use of electricity in catching fish.

Up to the present, none of these have been adopted by the fishermen, either because they feel there is no need for them in their areas of, and methods employed in, operation, or the additional expenses are incompatible with their rate of income in the industry. The indispensability of these modern fishing paraphernalia may be realized when fishing operations shall have been extended to the high seas.

Municipal and Sustenance Fishing

Fishing craft of three tons or less account for 60% of the total fish production. These are operated for commercial and subsistence purposes in coastal waters close to population centers continuously throughout the year. Fishing gear commonly used are the bagnet, beach seine, drag seine, drive-in-net, filter net, bamboo fish corrals, fish pots, gill net, hand line, small purse seine and the push net.

At the rate of increase in population at 2.9% or an increase of 660,000 annually, there is a constant demand of supply so efforts of catching fish are directed by fishermen to increase the catching power of their gear in areas close to population centers which are most accessible. They reduce the size of the meshes of their nets to catch even the immature ones. Continuous intensive fishing not proportionate with the natural recuperative power of the fishing ground is rampant. Now, certain fishing grounds show signs of overfishing, if not depletion, although, to say so would be an overstatement in the absence of any scientific investigation.

● The inland fisheries of the Philippine are underdeveloped in proportion to its extent and potentialities. The country abounds in lakes, marshes and swamps and is criss-crossed by rivers and streams that provide livelihood to the population in these areas.

The unit production of the natural inland waters, estimated at 50 kilogram per hectare annually, is very low compared to that of other countries. Preliminary hydro-biological surveys indicate that these water areas can support fish life more than that which they are supporting now and can be made to produce no less than 500 kilograms per hectare per year by effective fish stocking work and proper, effective fishery management and conservation. The government is presently doing this.

Milkfish culture is a business more lucrative than farming and private rice lands suitably located have been converted into fishponds.

Landing, Marketing and Distribution

● For administration and revenue purposes all fishing vessels over three tons gross are required to land their catch in any of the 70 officially designated fish landing centres. These compose cities and their environments, population centres and favorably located towns.

Marketing facilities are owned by fishermen or fish brokers. In general, they are not modern in the sense that there are no permanently well-constructed offices, piers or wharves, except in the big coastal cities where piers, cold storages and big markets are located.

Within the city of Manila fishing vessels unload their catch at a private dock provided with a cold storage where the fish, which are not disposed to the wholesalers, may be stored. Here the facilities are modern and sanitary.

Wholesale and retail business is in the hands of private merchants who dictate prices depending on the availability of supply and the extent of the demand.

Fisheries Research

● The lack of knowledge of the biology and like history of the important marine food fishes, of their behavior distribution and migration became more obvious in recent years when controversies arose among different groups of fishermen regarding the partial banning of otter trawl in certain fishing grounds for the reason brought forward by one group that otter trawl was the main cause of apparent depletion of the fishing areas. The government found itself in an unpleasant position when it had no data based on scientific studies with which to make a stand or to meet the issue.

Fisheries research has been hampered by lack of funds. From 1947 to 1951, through the Rehabilitation Act of 1946, the Philippine Fishery Program of the U. S. Fish and Wildlife Service initiated some studies to solve the more pressing problems of the fisheries and little attention was paid to marine fishery biological research. Gear and food technology, fresh and brackish water fisheries biology, aquiculture, and oceanography were given priority when the main concern of the government was to put the country back to its economy. When the Program terminated the Philippine Government took over and continued the studies, but failed in its endeavor to provide for biological research and, thereby, minimized the usefulness of the findings of the oceanographic surveys which explained certain fishery phenomena.

Presently the research program is beset with handicaps and draw backs due mainly to the lack of adequate funds which were previously covered by aid from different agencies, i.e. United Nations Technical Assistance Board, International Cooperative Administration of U.S., National Research Council of the Philippines, National Science Development Board and National Economic Council.

● Increase in fish production is being effected by promoting the expansion of fishing activities to off-shore and deep-sea areas, unexploited both inside and outside the territorial water limits. By the end of this year, a 100 ton fishing vessel from Japan will have been acquired by the government for demonstration and experimental purposes. It will facilitate demonstrations of modern fishing devices and methods, exploitations of new fishing grounds and extensive research. Simultaneous with these demonstrations and explorations is the policy of admitting a limited number of alien technicians to train local fishermen in the operation of the same. Technical assistance as is being provided by the Food and Agriculture Organization, may be extended to a longer period.

Development in the inland fisheries will be along the establishment of more fish and oyster farms and nurseries, introduction and demonstration of new intensive fish culture methods and techniques, and intensification of stocking work in natural waters to increase their yield.

Studies on the profitable utilization of fish and fishery products are also being undertaken. There are presently four fish meal factories and it is expected that the importation of this product from abroad will eventually diminish. Factories for canning fish have not been successful in the past years and it is doubtful if they will, in the near future.

With the growing consciousness for the urgency of developing the fishery resources of the country it is hoped that the much needed capital will be encouraged into profitable investment.

● Best available data on the world's fisheries indicated that in 1958, the last year for which even reasonably comprehensive world figures are available, the Philippine Republic stood sixteenth among the world's nations in catch of fish and shellfish of all kinds.

Thus the Philippine Republic, with an estimated 986,000,000 lbs. in 1958, ranked just behind France and Portugal, and just ahead of the Union of South Africa and South Korea.

The Philippines' catch represented 1.3% of the estimated world total of 74,339,000,000 lbs.

Japan ranked first with more than 12 billion pounds, more than the combined catches of the United States and the U.S.S.R., which ran in second and third places.

With the seas around the Philippines known to carry important fish populations, the growth potential of the republic's fishing industry is ranked high.

Philippine Commercial Fishing Vessels

Category	1954	1955	1956	1957	1958
Number of vessels, total	1,346	1,238	1,210	1,112	1,426
Gross registered tonnage (metric tons)	39,693	32,338	28,622	24,897	30,749
Non-powered vessels	...	3,457	3,174	1,469	5,461
Powered vessels	...	28,881	25,448	23,428	25,288
Total investment (pesos)	15,487,104	14,281,039	14,675,243	12,220,569	19,289,910
Total production (kilograms)	103,220,313	107,210,238	106,659,273	93,948,070	111,876,555
Powered vessels	...	92,380,433	86,895,853	76,227,626	87,477,325
Non-powered vessels	...	14,829,805	19,763,420	17,720,444	24,399,230
By method of propulsion:					
Powered vessels	1,009	887	904	900	1,186
Non-powered vessels	337	351	306	212	240
By gear and activity:					
Bag net	653	670	574	540	733
Beach seine	51	49	48	50	56
Beam trawl	50	24	22	11	...
Gill net	1	...	1	1	4
Hook and line (hand line)	9	11	15	43	57
Long line	...	...	2	9	...
Muro-ami	3	10	21	22	31
Purse seine	49	38	76	65	57
Otoshi ami	...	...	...	1	4
Otter trawl	309	301	313	283	349
Round haul seine	111	78	104	62	92
Others	6	9	4	...	6
Miscellaneous*:					
Fish carrier**	50	2	4	2	1
Pearling vessel#	5	7	2	3	2
Towing vessel##	49	39	24	20	34
Number of licensed fishermen	10,322	10,287	16,348	15,388	12,530
Legitimate fishermen	10,256	10,221	16,309	15,383	12,422
Pearl divers	66	66	39		108

* Net engaged in catching fish.
** Used as fish transport.

# Used in pearl fishing only.
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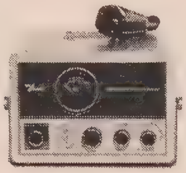

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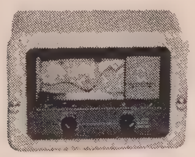

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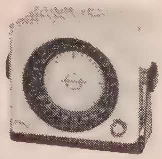

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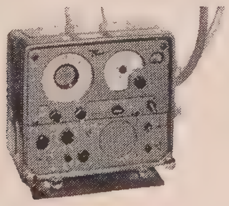

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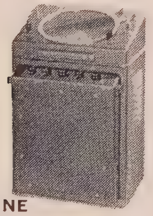

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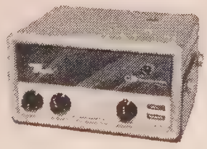

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YUGOSLAVIA

By MILJENKO GRUBELIC

● Yugoslavia's fishing industry is still to a large extent coastal in character, with the majority of its fishermen engaged in fishing within the waters among the numerous Yugoslav islands, whose waters are rich in fish varieties, but not in quantity. The Adriatic as the fishing area of Yugoslav fishermen belongs to the poorer seas. In prewar Yugoslavia normal economic condition of the island inhabitants was poor. Our economic emigration to the U.S.A. has, therefore, to a considerable degree taken place in this area. The fact that a considerable number of Yugoslav emigrants has been engaged in fishing can only be explained by their having continued the activities of their fishermen ancestors. A considerable number of our emigrants in the U.S.A. found places in the American modern fishing industry. It has, therefore, been a matter of great satisfaction for us to be in a position to present this short Survey of Yugoslav Fishery to the eminent *Pacific Fisherman*, which has contributed to a great extent to the promotion of both American and world-wide fishery during the last 56 years.

● The most important Yugoslav fishery is that for sardel (sardine), and the majority of vessels intended for sardel fishing are equipped with California type nets (kruzne mreze plivarice), which have been introduced by Dalmatian fishermen who have brought them over from the U.S.A. and adapted them for use in the Adriatic area. The first nets of this type were recorded as early as 1928. Despite the fact that these circular nets have been the most efficient fishing equipment for sardel catching, there are still a considerable number of drawing nets (mrezc potegaca) to be found in Yugoslav fishery. In both types of nets sardines are caught by using lights.

Vessels used to catch sardelles (as well as other small blue fish such as mackerels, anchovies, sprats, etc.) we can divide into two main categories:

a). Boats called "leuti" of a length of about 10 m, and b). Boats called "plivaricari" of a length of 17 or more meters.

The first use of circular nets (kruzne mreze plivarice") of a length of 250 m. and a depth of about 80 m. or with drawing nets (mreze potegace) use two boats, each with kerosene lamps of 2,000 to 8,000 candles. The number of fishermen varies from 12 to 16. The net generally is drawn on board by hand.

Boats of a length of 17 or more meters have nets of 300 or more meters, and 90 to 100 m. deep. Lighting is by electricity. The number of the crew 10-12 men. Lifting of the net is by motor and winch.

Nets made of nylon have been used during the last five years, all bigger boats having nylon nets, but of the smaller ones an insignificant number only.

During the last few years particular attention has been paid to the catching of small "blue" fish, which amounts to over 70% of Yugoslav sea fishing. A fleet of new 120 boats of 17 and 18 m. has been built dur-

The Old and the New in Yugoslavian fishing vessels. In the foreground are the antique "gaete", while farther out are the modern "plivaricari".

NOTE—Mr. Grubleic is director of the Direction of Fisheries of Croatia, Yugoslavia.

YUGOSLAVIA

ing the last few years, with about 20 ships under construction today.

Such vessels, owing to their stronger maritime qualities, are setting out after the fish wherever it appears in greater quantities, as distinguished from the "leuts," which remain in the traditional fishing grounds waiting for the fish to appear. Such larger craft are making use of radiotelephone, asdic and other modern equipment. The results of the last few years have convinced owners that they had better abandon the classical type of ship destined for sardelles fishing and direct themselves to the larger type, which has from one year to the other proved a ship suitable for the conditions of the Adriatic area. Such a ship catches in the average three times as much as a "leut." By the further construction of such ships with a greater radius of action and by abandoning smaller types of ships, Yugoslav fishing will gradually lose its characteristic of being seasonal and limited to the coast.

About 30 tunny (tuna) vessels of a length of 21 to 26 m. with large circular nets also of California type, have achieved very poor results, as only very small quantities of tunny are coming to the Adriatic. We are therefore studying the possibilities of fishing outside the Adriatic area with such ships. But before they are sent tunny-fishing outside the Adriatic, it will be necessary to redesign them somewhat. In this respect it is again necessary to follow the most recent rationalizations effected by California fishermen on their tunny-ships, and particularly in the system of lifting nets by means of the power block as well as in the recent system of fish refrigerating.

● In addition there is in Yugoslav fishing for various kinds of fish along the Yugoslav coast where the bottom is preponderantly rocky. Such fishing is attracting the attention of numerous tourists, who come to Yugoslavia in steadily increasing numbers each year.

Edible mussels from breeding-places on the Yugoslav coast have a particularly good taste and are of a very good renown. The natural condition for breeding of especially oysters and common mussels are very favorable. At present new breeding-places are being established. This year 1959 can be considered a turning point in the development of mussels.

● Considering the volume of possibilities offered by the sea, it can be said that the Yugoslav fishing economy has better developed its fresh-water fishing production. In relation to prewar conditions this production has also increased for 65%. The greater proportion of freshwater fish production, 54%, is covered by open waters and lakes, and the smaller 46% by ponds. The production in ponds is almost entirely in the hands of enterprises being under the control of people's committees community. Only recently the organizing of small ponds within the framework of cooperative societies has been started.

Yugoslavia Fish Catch

BY PRODUCING FACTORS

(In Metric Tons)

Year	1938	1954	1955	1956	1957	1958
SALT-WATER FISHING:						
Common social sector	...	3,181	4,108	6,060	6,436	7,332
Co-operative sector	1,803	5,364	3,642	4,531	4,959	5,142
Private sector	11,070	6,395	5,850	7,678	8,760	8,101
FRESH-WATER FISHING:						
Pond fishing	2,340	3,268	3,332	3,481	4,233	4,960
Open water & lake fishing	4,815	4,837	5,656	6,691	6,334	5,906

● The volume of production and the structure of Yugoslav fishing can be seen from the accompanying tables.

Before the war almost all salt-water fishing was done by private fishermen. Except for 120 fishing-cooperatives, all means of fishing was the property of individual fishermen.

After the war the cooperative sector has become more important, as well as the general socialized state sector by means of fishing enterprises which are being managed, under the control of the competent communities, by the fishermen themselves represented by their "workers councils."

The total number of motor fishing vessels amounting to about 1,400 (ranging from tunny-fishers to motor-boats) has at present been grouped as follows:

Social sector (state)	113 vessels
Cooperative sector	229 vessels
Private sector	1039 vessels

Yugoslavia Fishing Fleet

YEAR	Fishing ships bigger of 10 tons		Fishing boats		
	Number	Tons	Number	Tons	Hp.
1939	84	3,260	6,652	9,180	2,404
1955	129	4,322	2,515	6,281	9,824
1956	142	4,780	2,663	6,749	11,418
1957	157	5,151	2,655	6,874	12,082
1958	165	6,240	3,360	7,186	12,724

In small-scale coastwise fishing there is still a large number of small motorless fishing boats which are, however, gradually being motorized.

The utilization distribution of caught fish in 1959 was:

a. Saltwater fishing	
Fishing industry for processing	37.2%
Salted	10.2%
Exported abroad	7.3%
Homeland consumption	45.3%
b. Freshwater fishing	
For processing	5.1%
Exported abroad	16.9%
Homeland consumption	73.2%
For reproduction	4.8%

From all this it is evident that the Yugoslav fisheries are not very considerable, despite the tradition of Yugoslav fishermen. The reasons for such undeveloped fishing activities are to be looked for in:

a. The poverty of the Adriatic Sea, which in the past, owing to the limited means available, was accessible only to coastal fishermen;

b. Neglect of that industrial fishing activity in pre-war Yugoslavia.

Yugoslavia Fish Catch by Years, in Metric Tons

Year	1938	1948	1953	1954	1955	1956	1957	1958
Salt-water fish	12,873	16,492	17,299	14,940	13,600	18,269	20,155	20,575
Fresh-water fish	7,155	7,452	8,710	8,105	8,988	10,172	10,567	10,866
TOTAL	20,028	24,944	26,009	23,045	22,588	28,441	30,722	31,441

CHILE

● The Republic of Chile, with a 2000-mile coastline dotted with good harbors, and with an unmeasured wealth of fish and seafood swimming in her territorial waters all the way from the Peruvian border almost to the Cape Horn, has been admittedly slow to develop her ocean wealth.

The first to admit this are Chilean fishery officials themselves; but they know the resources are there, they are aware of what is needed, and they are striving to do something constructive about it.

Results are beginning to show. According to statistics furnished *Pacific Fisherman* by Sr. Moises Hernandez Ponce, director of the Department of Fish & Game Development of Chile, the year 1958 (latest for which complete figures are available) was the best in the history of Chile's marine production. And the signs are that 1959, when statistics are complete, will prove even better.

In 1958, Chile produced 171,860 metric tons of fish and 53,946 m.t. of sea foods, for a total marine production of 225,806 m.t. This is 12,613 tons or 6% better than 1957, and 11,477 m.t. better than the previous high year 1955. (One metric ton equals 2,204.6 lbs.)

For the first three months of 1959, Chile produced fish and sea food totalling 68,494,849 metric tons, almost 40% ahead of the same period last year, when 49,358,241 m.t. were the total.

Wanted: Boats and Money

● The Chilean Government, and private Chilean fishery and packing firms, are striving to increase the Chilean fishing fleet, which, according to U.S. Bureau of Commercial Fisheries reports, is down to about 70 boats averaging 70 tons each.

The Chilean Government is striving to attract fishermen and fishing vessels from foreign lands, and also to build up a Chilean boat-building industry.

Last year the Comision pro Fomento del Consumo de Productos Pesqueros (Committee for Promoting Consumption of Fishery Products) was formed. It is made up of fishing industry executives, fishing cooperatives, distributors of fish and sea foods, and Government people. Government funds have been appropriated to finance its activities.

The aim of the committee, of course, is to increase home consumption of fish and sea foods, and it has enlisted the aid of a marketing expert from the Food and Agriculture Organization of the United Nations. His aid will augment the efforts of the committee on its own.

CHILE LANDINGS OF FISH AND SEAFOODS

(In metric tons at principal ports.)

Years	Fish	Sea Foods
1931	11,836	5,180
1932	14,204	8,982
1933	18,572	8,623
1934	17,680	8,207
1935	21,104	7,676
1936	27,579	7,282
1937	28,778	7,909
1938	24,114	6,458
1939	28,912	7,642
1940	27,094	11,216
1941	29,017	8,363
1942	24,086	8,128
1943	30,999	9,549
1944	29,023	10,778
1945	32,623	14,401
1946	39,815	21,128
1947	45,693	14,378
1948	47,396	17,328
1949	60,375	15,871
1950	69,300	17,424
1951	73,106	19,931
1952	94,370	23,916
1953	87,077	19,665
1954	104,381	39,121
1955	169,725	44,604
1956	141,795	46,530
1957	157,413	55,780
1958	171,860	53,946

—Dept. of Fish & Game Development
Ministry of Agriculture
Republic of Chile

● To help the production end of the business, the Government has under consideration legislation to ease the tax and import burdens on importers of machinery and equipment for catching and handling fish.

The Government also has under consideration an appropriation of money for creating a fund to aid the fishery industry in all its branches.

The leading variety of fish in the Chilean industry is hake, which leads both as a fresh fish for market consumption and as a processing fish in the fish-meal industry.

In 1958, according to the Chilean Fish & Game Development Dept., the total catch of hake was 75,596.1 metric tons, which accounted for 44% of the total catch of fish, excluding shellfish and sea foods. Of this total, 22,022.5 m.t. were consumed as fresh fish, while 53,573.6 were processed into meal. Next in volume were anchovies with landings of 39,535.9 m.t., all but 7.8 m.t. processed into meal.

Fish Boats and Ports

● The boats used in the Chilean fishery are mostly native craft, wood hulls, and many without power. However, many company-owned boats are bigger. Some have steel hulls and are powered. Refrigeration has not been generally introduced, and fishing is therefore almost entirely a day operation.

One of the missions undertaken by Marine Construction & Design Co. of Seattle recently is to build in Chile, modern steel boats with mechanized equipment to demonstrate to Chilean

CHILE

CHILE'S HAKE LANDINGS

Year	Metric Tons	Index 1945=100	Pct. of Total
1945	11,083	100	34
1946	15,171	137	38
1947	21,941	198	48
1948	23,411	211	49
1949	31,363	283	52
1950	33,105	299	48
1951	42,831	386	58
1952	64,448	582	68
1953	59,025	533	68
1954	56,091	506	54
1955	93,074	848	55
1956	78,204	706	55
1957	81,393	734	52
1958	75,596	682	44

fishermen and processors the advantages of modern mechanized equipment.

Based on first-quarter 1959 figures, the leading fishing port of Chile is Iquique, which is also the northernmost. Next in volume is Talcahuano, more than 1000 miles south. Others are San Antonio, Antofagasta, Valparaiso, Coquimbo, Puerto Montt and Valdiva, although catches are made as far south as Punta Arenas in the Straits of Magellan, at about South Latitude 53° and as far north as Arica, right on the Peruvian border.

The Department of Fish & Game Development lists 90 firms canning and processing fish and seafoods, producing meal and oil, and hunting and processing whales. Five of the firms are in Punta Arenas, four of them canning the fine Southern centolla or crab.

- The U.S. Bureau of Commercial Fisheries quotes trade estimates of 1,636 whales captured in 1958. Official figures for 1956 and 1957 give 1,614 and 1,510 for the two years, respectively.

The Chilean authorities list three whaling plants in the Republic, one each at Iquique, Valparaiso and Talcahuano.

CHILEAN WHALE KILLS

Species	1958	1957
Blue	220	190
Finback	210	200
Humpback	...	10
Sperm	1,206	990
Other	...	120
TOTAL	1,638	1,510

Chile uses most of its whale products right in the Republic itself, consuming whale and sperm oil in the manufacture of oleomargarine. In 1958 sperm oil production was 4,200 metric tons and whale oil 3,600 metric tons.

CHILE FISH AND SEAFOOD LANDINGS BY DISTRICTS

(In Metric Tons)

FISH

Districts	1958 Total	1958 Jan-Mar.	1959 Jan-Mar.
Iquique	48,671	6,134	26,735
Antofagasta	8,888	1,913	5,195
Coquimbo	5,094	1,321	1,460
Valparaiso	14,278	2,629	2,521
San Antonio	28,152	8,776	5,580
Talcahuano	52,350	22,940	24,624
Valdivia	3,723	1,227	982
Puerto Montt	10,704	4,413	1,394
TOTALS	171,860	49,358	68,494
SHELLFISH			
Iquique	1,352	322	243
Antofagasta	226	53	75
Coquimbo	6,940	926	715
Valparaiso	8,810	1,278	465
San Antonio	833	30	62
Talcahuano	3,780	795	450
Valdivia	3,268	551	466
Puerto Montt	28,737	5,216	4,694
TOTALS	53,946	9,174	7,174

CHILE FISHERY EXPORTS

1958—In Metric Tons

Commodities	Quantity Metric Tons	Value U.S. $
Fresh and Frozen—		
Tuna	39.4	8,703
Cachurreta	14.9	1,613
Congrio	4.9	1,264
Corvina	.6	95
Hake	2.1	150
Others	2.1	190
Canned fish	88.4	33,441
Fresh and Frozen—		
Shrimp	27.9	19,701
Lobsters	.02	34
Lobster tails	496.3	581,923
Canned Sea Foods—		
Crabs	5.3	3,937
Lobsters	168.3	193,847
Others	23.0	17,600
Fish Meals, etc.—		
Fish	10,140.2	974,413
Lobster	720.3	18,646
Whale	74.7	5,032
TOTAL EXPORTS	11,808.0	1,958,640

- The tuna business is one where there is lots of room for development. Although Yellowfin, Bluefin and Albacore are all fished from Arica to San Antonio, in the northern region, Chilean exports of tuna amounted to only 24 metric tons in the first six months of 1958.

Practical skippers who have worked in Chilean waters are enthusiastic about the quantity of mackerel found off northern Chile. There is probably a good potential domestic market for mackerel as a low-price canned fish and also as a market fish, and this may well be one of the directions in which Chilean authorities may point some of their strong marketing efforts.

Acknowledgments are due to Sr. Moises Hernandez Ponce, director of the Department of Fish & Game Development, who furnished much of the information on which this report is based. The Department headed by Sr. Hernandez is an arm of the Ministry of Agriculture, and is located at Valparaiso.

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SPAIN

- Spanish tuna canners were quick to capitalize upon the scarcity of Japanese summer Albacore in 1959, using the opportunity to sell substantially increased volume of canned Albacore to the United States, meeting a demand normally covered by Japan.

The demand for Albacore in the United States developed just about the time in July when the new exchange rate of 60 pesetas to the U.S. dollar gave a fillip to trading.

The two stimuli, taken together, provided a real push to Spain's tuna exports to the United States. Of the two influences, traders believe the revaluation of exchange was the more productive.

Prior to the adjustment of the exchange rate of 60 pesetas per US$1, canned fish exporters had been allowed premiums up to 8 pesetas on the then official rate of 42 pesetaras to the US$1, bring the previous effective rate up to 50 pesetas.

- Spain's most important tunas from the commercial standpoint are Bluefin (Thunnus thynnus) and Albacore (Thunnus alalunga), which are referred to in Spain as "Red tuna" and "White tuna", respectively.

In the canneries, however, both species are packed under the generic term "tuna", although the species are segregated in the pack and in sales.

Principal fishing waters for Albacore and bonito are on the north coast of Spain; but the Spanish fleet in recent years has been developing its operations in the tuna fisheries of the subtropical east Atlantic ocean, with good results. The larger vessels of the Spanish tuna fleet work the seas off the West African coast, and particularly in the vicinity of the Canary Islands.

- Tuna and tuna-like fish produced by Spain as risen in recent years from 33,000 metric tons in 1953 to approximately 45,000 metric tons in 1958.

Results for 1959 are not yet available, but fishing generally is reported to have been good in major areas through the year and it is anticipated that the annual production will establish a new record.

Economics of the Spanish fleet operations early in 1959 off Dakar were excellent, and in striking contrast to those vessels which remained in their home waters, principally in the vicinity of Bermeo.

Improved earnings for the African fishing vessels resulted in large degree from improved transportation, with five transport vessels working. The fishing boats averaged from 7 to 8 metric tons of tuna daily for their season.

In contrast with the financially successful operations of the Dakar fleet, the 105 vessels of the same size and type which remained in the Bermeo home fishery suffered disastrously, due in large degree to the shortage of bait, which kept some vessels idle for weeks at a time.

- Spring Albacore fishing for the Spanish vessels was excellent, but the prices at that time were low, as the Japanese shortage had not developed.

With Albacore ex-vessel price at about 10c U.S. per lb., spanish fishermen in the early summer of 1959 were studying the possibility of exporting Albacore to the United States frozen instead of selling it to the Vigo canning industry.

Higher prices for Spanish canned fish generally were reported to have reacted against trading, and one authoritative commentary said:

"As result of the higher raw material costs, Spanish canned fish products are becoming a luxury item in the domestic market and are being priced out of world markers. Ex-vessel prices for sardines in Portugal are about 50% lower than the prices paid to Spanish vessels. Due to increasing costs, Spanish bankers are screening their loan applications carefully."

- Export licenses for exports of canned and salted fish in 1958 totaled 28,320 tons. Important items exported in 1958 included 1,358 tons of anchovies in oil, 9,733 tons of salted anchovies, 1,310 tons of tuna in oil and brine, and 1,526 tons of bonito in oil. Although exports of all fishery products rose about 25% from 1957 to 1958, canned fish exports were lower. The drop in exports of canned fish was due to severe competition from Japan, Portugal, and Yugoslavia, increasing competition from Morocco, and the development of a strong fish canning industry in Peru. Exports of canned Albacore to the United States were up about 19% in 1958 from the preceding year. Canners were worried about the continuing decline in the exports of anchovies in oil—1958 exports of this item were down 35% from the 1956 exports.

- Developments in the Spanish fish meal business led to restrictive action in 1959. The Economic Council of the Fisheries By-Products groups of the National Fisheries Syndicate decided that import licenses for fish meal would not be granted until the Syndicate certifies that the national production cannot meet the demand. It is estimated that Spain consumes about 40,000 tons of fish meal yearly while Spanish production is about 30,000 tons. Plant capacity is sufficient to process more than this total, but the supply of raw material is inadequate. In 1958 it was estimated that 2,160 tons of fish meal were imported to partially make up the deficit in the supply of fish meal.

- Spain's National Fisheries Syndicate in 1959 rejected a proposal by a Norwegian fishing company that it establish tuna fishing operations, using Norwegian vessels, based on Ceuta, Spain.

The proposal was considered an important and significant one, "especially in view of the harm caused to Spain's export market in Italy by Japanese competition with Atlantic tuna", in the words of the official comment, which continued: "The Permanent Commission of the Economic Section of the National Fisheries Syndicate decided that establishment of a Norwegian tuna fishing based at Ceuta might hinder economic progress of Spain's tuna fishing industry."

GHANA

- Strategically located on the great Gulf of Guinea, on waters endowed by an abundant population of ocean fishes, Ghana looks to the sea for (1) protein food for its people, and (2) export products and the foreign exchange they command.

Both are vital to the future of one of the world's newest independent states.

Ghana, for many decades of its colonial existence known as the Gold Coast, in 1959 embarked upon a program of planned fisheries development. To that year the future will look back as the beginning of industrial fishing in Africa's equatorial west coast.

True, Ghana had been fishing sardines and other small wet-fish in its coastal waters, using large quantities of cotton seine netting, primarily of Japanese manufacture. But the fishermen of Ghana, using this gear, were unable to supply the great demand of the population of six million, who depend upon fish and fish products as their primary source of protein.

- With sardines along the coast and tuna off-shore, the government of Ghana looked to the industrial fisheries of California—American center of tuna and sardine fisheries—for the cooperation and know-how on which to base an industrial development which would yield food to meet the domestic demand, plus an exportable surplus to yield credits in international trade.

The government of Ghana planned two fishing ports on its coast, equipped with freezing and storage plants, perhaps with canneries, and with all the facilities required of competent fishing basins.

Knowing what it wanted in a broad way, Ghana's government turned to practical operators of California for expert advice.

In August, 1959, the Minister for Economic Affairs of Ghana signed an agreement with Star-Kist Foods, Inc., of Terminal Island for a survey of its fisheries and recommendations for their development along the lines visualized.

- Under this contract the company was to carry out, in conjunction with the Ghana Fisheries Department, a survey to determine:

(1) The most effective method of capturing the available tuna and other pelagic fish, and the type of vessels best suited for the work.
(2) The feasibility of the project and economic studies relative to the establishment of a tuna-freezing and canning industry at Tema.
(3) The abundance and availability of tuna within a thousand-miles range of Tema.
(4) The abundance and availability of tuna bait along the coast of Ghana.
(5) The availability of other shoal fish susceptible of being processed at Tema.
(6) The feasibility and economic studies relative to the establishment of a wet-fish industry at Tema.

The survey, which was financed jointly by the government and United States firm, sought to test the feasibility of establishing a deep-sea fishing industry based at Tema with shore establishments for canning, freezing, and the manufacture of fish meal.

- In furthering these broad studies, the Ghana government and Star-Kist undertook explorations designed: (1) to assess the fishery resources of the coastal and high seas adjacent to Ghana; (2) to stimulate a new Ghana fishery for pelagic species if they are found in sufficient concentrations; (3) to study the possibilities of a tuna processing and freezing plant in Ghana; (4) to study biological and oceanographic conditions in the Gulf of Guinea and along its shores.

Official announcement of the program says that if encouraging evidence is found of adequate sources of tuna, and bait fish, the company will undertake fishing operations. A part of the fish taken would be used for domestic consumption in Ghana, while the remainder would be available for shipment to the new cannery which Star-Kist is completing in Puerto Rico. "Eventually, the canner plans to build a cannery in Ghana," according to the language of the official statement.

- Originally employed in the exploration is the tuna clipper *Columbia,* with cargo capacity for 220 tons of frozen fish. She is manned by a crew of eight, plus a fisheries biologist. In Ghana five technicians from the Ghana department joined the personnel.

Columbia is operating out of Takoradi, Ghana, and was scheduled to spend several months on investigations whose scientific objectives include:

(1) To study the salinity, temperature, current and thermocline distribution with the Gulf of Guinea over a period of several months;

(2) To relate these oceanographic data with the distribution of various types of fishes;

(3) To collect, identify, and study the distribution of inshore and pelagic fishes;

(4) To contribute knowledge of the biology of Yellowfin and Skipjack

tunas. These studies will include food habits, growth rate, size composition, population structure, and fecundity. A special effort will be made to collect larval tunas and to find spawning areas.

● Not the last interesting aspect of this comprehensive exploration, rearch and evaluation is the fact that the new government of Ghana chose to enter into a contract with a private corporation, outstandingly successful in industry, rather than to commit the enterprise to one of the organizations of international cooperation.

● Norwegian interests also are reported to be taking an active interest in the development of fisheries off Ghana in the Gulf of Guinea. Two Sunnmore operators in the herring field are reported actively planning to participate in the fisheries for fish of this same general character out of Ghana.

As an initial step they are reported to have joined with Ghana interests in the establishment of a fishing corporation under Ghana law.

PORTUGAL

● Abundant catches of sardines by the fishing fleet of Portugal during the late fall of 1959 may have made that year the best in the industry's history.

Exact figures for the 1959 catch were not available at time of writing, but it appeared entirely possible that they would exceed the best previous year.

The export trade was good during the year, but the amount of sardines which could be canned was somewhat limited by shortages of tinplate in the autumn months.

Canned sardines in olive oil constitute by far the largest item in the Portuguese export fish trade, followed by anchovy fillets in oil.

Notable for its potential rather than its volume is canned tuna, a product which is sold primarily in other European countries, rather than in the United States, which is the principal market for the world's pack of tuna. The Portuguese product is packed in olive oil and appeals to the European market particularly.

● Prospects for increasing sales of the ultra-quality Portuguese sardines in the United States were closely studied by the industry as 1959 ended. There were several reasons for this concern:

(1) The aboundant catch and the promise of continued good fishing;

(2) Concern over the possible adverse effect of the European Common Market in the Portuguese trade, which fears that perhaps French sardines will displace the Portuguese product in Common Market countries.

(3) Desirability of foreign exchange credit in dollar countries.

(4) Scant return from the salt codfish expeditions of 1959.

● Morocco is seen as a threatening competitor by some elements of the Portuguese industry, who point out that there has been a growing tendency throughout 1959 for Morrocan producers to ship fresh sardines from north Africa to France for canning. It was pointed out that the six Common Market countries consumed from 50-60% of total Portuguese sardine exports and loss of this market to Morocco would have a serious effect on the industry. Most sources felt that sales to the United States could be increased, provided that the industry greatly reduced the great number of brand names and invested more heavily in advertising in the United States.

● Portugal's salt codfish fleet suffered a disappointing season again in 1959, when the general downward trend of recent seasons was continued.

An official who accompanied the fleet stated that the yield per hour of trawling in the Greenland area has declined from 4.19 metric tons in 1955 to 2.45 metric tons at present. The catches of the trawl-line vessels has declined from 4.13 tons to 2.79 tons per hour fishing by one vessel's dories. The drop in the catch per unit of effort is causing grave concern to the Portuguese cod fishing industry.

● Possibilities for Portuguese fisheries development in the field of canned tuna are considered sufficiently attractive by businessmen in Lisbon to merit earnest effort and cultivation.

World standing of Portuguest sardines and anchovies in high-class markets could be extended to tuna, they believe, providing (1) quality is established and maintained at a level comparable with the high reputation won by the products packed from the tiny fish; and (2) the identity and reputation of Portuguese sardines and anchovies are extended to tuna through competent, consistent and well-sustained promotion, particularly in high-class markets where discriminating buyers are willing and able to pay prices for fancy goods.

At year-end 1959 Portugal was reported to have six tuna vessels of clipper character, matching Italy in this area of expansion of its high seas fishing fleet. At present Portugal is operating two large tuna vessels.

Both Italy and Portugal will fish for tuna chiefly in the Atlantic and the catch will be landed in Italy. France, too, is pushing construction plans for tuna vessels.

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MEXICO

- Pacific Coast operations continue to dominate Mexico's shrimp industry, as shrimping continues to dominate Mexico's fisheries as a whole.

This is plainly evident from the statistical data for 1958, the last year for which full information is available.

Main points:

1. Record for the Mexican shrimp industry was set in 1958 with deliveries of 52.271 metric tons.

2. This was 16% better than the previous year.

3. The increase was all on the Pacific Coast of Mexico, where landings rose 30%; while the east coast of Mexico's shrimp landings declined 7% in the year under review.

4. The Pacific Coast of Mexico produced 70% of that country's shrimp.

5. Sinaloa, on the Pacific, replaced Campeche as the leading shrimp producing state.

The two states named account for more than half of all Mexican shrimp, Sinaloa producing 29% and Campeche 27%.

An analyst of Mexican shrimp data presents his opinion of the condition of the resource in these words:

"For the past several years Mexican productive capacity has been capable of catching most of the annual shrimp crop. Annual landings now depend primarily on annual changes in the reproductive capacity of the stocks of shrimp. The reproductive capacity is known to fluctuate each year, probably to a great extent caused by changes in environmental conditions. The excellent run of shrimp on the Pacific Coast of Mexico in 1959 perhaps was partially associated with temperature changes and increased rainfall. The 1958 fall and winter run of shrimp in this area probably approached maximum for a good year. However, knowledge of shrimp population dynamics has not yet reached the state where accurate predictions can be made as to when good years and bad years will be forthcoming."

- Growth of Mexico's fishery industry generally is revealed impressively by data for 1958, the last year for which full information is available.

In general it is anticipated that 1959 will be found to follow the same trend when statistics covering that year are compiled.

Edible fish product landed in Mexico in 1958 increased by 16,000 metric tons to a total of 131,000 m.t. These data do not include the kelp cut, which showed a decline.

Shrimp landings of 52,000 metric tons accounted for 40% of the total landings by weight, and a much larger percentage in value.

A long gain of 80% was made in the Pacific sardines landed in Mexico in the year under review. Shark and tuna landings also gained strongly, although Pacific and Jack mackerel deliveries showed some decline.

In 1958 Mexico exported more than U. S. $36,000,000 in fish and fish products, with imports of these items less than $2,000,000. Significantly, the

Mexico's Canned Fishery Products Pack

Product	Quantity		Value
	1958	1957	1958
	. . . (Cases) . . .		US$ 1,000
Sardines (15-oz. 48 cans/cs.)	334,000	155,000	3,504
Abalone (16-oz. 48 cans/cs.)	106,000	105,000	2,072
Shrimp (about 11.1-oz. 48 cans/cs.) . . .	96,000	60,000	1,904
Tuna & tunalike fish (7-oz. 48 cans/cs.)	2/80,000	12,500	904
Mullet (about 11.1-oz. 48 cans/cs.) . . .	30,000	10,000	216
Mackerel (16-oz. 48 cans/cs.)	25,000	70,000	208
Miscellaneous1/	15,000	18,000	208
Total cases	686,000	430,500	9,016

1/ Includes miscellaneous fish and shellfish, turtle meat, and specialty items.

2/ Includes an estimated 30,000 cases of yellowtail.

MEXICO

United States purchased 99.7% of Mexico's fishery exports, and supplied 22% of the imports.

One of the unusual aspects of the Mexican export trade in fish and fish products is that 94% were fresh and frozen products.

Again, shrimp accounted for 89% of all fishery exports. In Mexico's foreign trade shrimp is outranked only by cotton, coffee and lead in point of value.

● Mexico's export trade in frozen shrimp—which in 1958 ranked fourth among Mexican exports — during the first part of 1959 ran 50% above the rate of the previous year.

Figures for all 1959 are not yet available, but the belief is strong that shrimp readily held its rank as an earner of foreign credits for Mexico. This would be in spite of conservation closed seasons on both coasts of the republic.

In the spring the Campeche shrimp fishing fleet voluntarily adopted a two-months closed season within a conservation zone extending 9 miles from shore.

This was followed in July and August by a Pacific closed season.

● Some encouragement for the export trade in shrimp from Mexico to the United States was seen in the 1959 reduction in export duty which became effective in August of that year.

Under this tariff change Mexico lowered the export duty on *frozen* shrimp originating from the Gulf of Mexico, and from Salina Cruz, Oaxaca, and Santa Rosalia, Baja California, by about 0.75 U. S. cents per lb.

At the same time the export duty on fresh or iced shrimp of the same origin was lowered about 4.2 U. S. cents per pound.

The change in duty was effected by lowering the official price upon which the duties are calculated. Duties on shrimp from other areas remain as previously, about 2.9 U. S. cents per pound for frozen and about 15.75 U. S. cents per pound for fresh or iced shrimp.

● Abalone provided a notable 1959 development in Mexico's export trade with the United States when about the middle of the year executive permission was granted for the export of frozen abalone steaks. For years Mexican regulations had prohibited the export of abalone in form other than canned, which limited the outlet largely to the Oriental trade.

In the first four months following the granting of permission for export of frozen abalone steaks the movement was estimated at 200,000 lbs., and observers were of the opinion that as the trade became more established the business of handling abalone in frozen steaks would exceed the canned product in export value. Further, it is believed in trade circles that the margin of profit in the steaks is substantially greater than in the canned product, while the market in the United States has vastly large possibility for development.

MEXICO SHRIMP LANDINGS

By States, Weight Heads On

States	1957 Metric Tons	1958 Metric Tons
PACIFIC		
Baja Calif., N.	462.8	1,308.9
Baja Calif., S.	47.0	118.5
Sonora	9,031.9	10,390.8
Sinaloa	12,102.3	15,007.2
Nayarit	1,133.1	1,803.2
Jalisco	29.6	1.0
Colima	16.1	96.1
Guerrero	132.0	139.4
Oaxaca	3,349.6	5,931.1
Chiapas	1,592.2	1,401.0
Total Pacific	**27,896.7**	**39,197.2**
EAST COAST		
Tamaulipas	1,039.2	820.0
Veracruz	1,736.1	1,121.3
Tabasco	165.9	162.4
Campeche	14,363.4	13,969.6
Total East Coast	**17,304.6**	**16,074.1**
Grand Total	**45,201.3**	**52,271.4**

The 1958 take of abalone in Mexico was reported at 6,800 metric tons, about 6% above that of the previous year. Practically the entire harvest is canned for export. The canned abalone generally are shipped to the United States and then re-exported to the Philippines and elsewhere in the Orient.

● Mexican landings of tuna—Yellowfin, Skipjack and Bluefin—were estimated at about 2,800 tons in 1958, of which about 1,000 tons were used domestically and the remainder exported to the United States for canning.

The 1958 landings of tuna moved up sharply from those of the year before, due chiefly to the acquisition of tuna vessels by some Mexican canners. As the tuna catching capacity of the Mexican vessels appears to be greater than the requirements of the canneries for tuna, it is anticipated that the export of tuna to the United States will continue in a small way.

The low level of 1958 fishing for Pacific and Jack mackerel was evident on the Mexican Coast as well as in California. Deliveries were only about one-third those of the previous year.

● In Mexico fishermen are divided into those belonging to cooperatives, and "free" fishermen, who do not. Official data in 1958 showed 33,961 fishermen in Mexico, of whom 23,983 or about 70% belonged to 189 cooperatives.

The Pacific, with 127 cooperatives, 16,761 cooperative fishermen and 4,430 free fishermen, accounted for 67% of the cooperatives and 62% of the fishermen.

Mexico's fishing fleet increased in the year under review to 14,360 boats, from 8,566 the year before. While a substantial part of this official gain undoubtedly is due to new construction or vessels converted to fishing, part of it at least results from closer registration of the craft.

During late 1957 and through 1958 there was a large influx of vessels to shrimping, including newly-built boats, those converted from other trades, and craft purchased from the United States or Panama.

● Despite comparatively low prices, resulting in widespread complaint among vessel owners, Mexico's shrimp industry on the Pacific closed 1959 with plain signs of further growth.

Significant among these is the new combined shrimp freezer and fish cannery at Santo Domingo, Baja California. It will have capacity for freezing 26,000 lbs. of shrimp daily, with frozen storage for 600,000 lbs. This is in addition to the production of 50 tons of ice daily, with ice storage for 500 tons.

Santo Domingo is on the west coast of Baja California, in the lagoon area connected with the northern end of Magdalena Bay. Thus the plant will be situated in an area which generally in the past has been served only by floating shrimp freezers.

In the past two seasons the west coast lagoons south from Scammons Lagoon to Cape San Lucas have been quite productive of excellent shrimp.

● One of the adverse conditions prevailing in Mexican west coast shrimp industry late in 1959 was the low market for brown shrimp, which were then coming to the fore as a leading factor in the catch.

Around Salina Cruz, one of the principal west coast ports for brown shrimp, the fishermen complained toward the end of 1959 that prices were so low that trips of from 4,000 to 5,000 lbs. of headless brown shrimp were proving unprofitable.

Vessels delivering at Salina Cruz operate in the sensitive area adjacent to the Guatemalan border, and near the end of October there was a renewal of the controversy which has flared there from time to time. Three Mexican trawlers were forced into San Jose, Guatemala, on charges of fishing illegally in Guatemalan waters.

BELGIUM

By O. STRADIOT

- Belgium's fishing fleet is unusual in that it consists almost wholly of trawlers.

At latest available report, this fleet numbered 441 vessels with gross tonnage of 29,105. Total horsepower is 73,872.

Of the fleet, 198 are small vessels of 10 to 25 tons with engines of 15 to 110 h.p., fishing inshore for shrimps and flatfish during summer—and spratts during wintertime. Near water vessels of 30 to 100 tons number 204, carrying engines of 120 to 300 h.p., and fishing the Irish Sea, the English Channel, and the south-eastern part of the North Sea for miscellaneous fish but especially sole and herring. Twenty-five are small distant water trawlers fishing the northern part of the North Sea and the Icelandic grounds for roundfish and herring; and 14 are large trawlers (6 steam- and 8 diesel trawlers) working Icelandic and other distant waters for roundfish and occasionally herring.

Total catches have substantially declined since 1947, due to dramatic deterioration of pelagic fisheries (herring).

The production of shellfish and crustaceans, mostly shrimps, knows ups and downs, 1958 being the worst shrimp season in years.

The catches of white fish were comparable with those of the best years especially when landings in foreign ports are taken into consideration: in 1958 they amounted to 7,057 tons as against 5,995 tons in 1957 and 2,496 tons in 1956.

Total annual consumption of tinned and canned fish is about 110 to 120,000 tons, imports being substantially larger than domestic production, but part of this import consists of species Belgium does not produce, unless in very small quantities, as mussels, oysters, lobsters, salmon, pilchards.

During 1958 Belgium imported 11,614 tons of white fish, but exported 9,001 tons of it. Imports of pelagic fish amounted to 23,131 tons and exports 2,455 tons. Of shellfish and crustaceans imports were 42,082 tons and exports 686 tons.

Studies show that the economic position of the fishing fleet is not a good one.

The inshore boats have known a bad period during 1957 and 1958, after the good years 1955 and 1956, but 1959 seems to promise much better.

The near water fleet has been handicapped by the heavy decrease of sole stocks on its most important fishing ground, the German Bight. Most boats have switched over to fishing the English Channel and the Irish Sea, but only the most efficient, generally the smallest, succeed in making a living out of it.

The small distant water trawlers are the only class that pay good dividends but, owing to the extension of the Icelandic territorial waters, they meet now with some difficulties.

The large trawlers have worked fairly well, but their owners are now investing much money in investigating new fishing grounds. To fish more distant waters they intend to replace their vessels by larger ones.

As a whole 1959 promises not to be much better than the former years. A certain number of owners grow more and more in debt, especially those who own less efficient vessels.

Owners organizations approach the government asking them for intervention. Their principal demand is to put a brake on the large imports. Other measures studied, or carried to effect are: a minimum price scheme, reorganization of government and research bodies, financial encouragement of replacement of obsolete craft by more efficient vessels.

NOTE—Mr. Stradiot is chief of the Belgian Service of Maritime Fisheries.

Belgian Port Landings by Belgian Fishing Vessels

YEAR	Demersal fish		Pelagic fish		Shell-fish		TOTAL	
	Tons	1000 F	Tons	1000 F	Tons	1000 F	Tons	1000 F
1938	28,449	101,687	7,541	6,864	3,145	14,828	39,135	123,379
1946	29,849	305,594	38,545	103,851	1,300	36,426	69,694	445,871
1947	40,032	409,425	33,264	99,516	2,074	40,420	75,370	549,361
1948	37,318	348,103	25,320	74,246	1,802	39,701	64,440	462,050
1949	39,690	373,873	19,502	47,146	2,120	43,648	61,312	464,667
1950	37,634	335,050	13,492	42,203	2,054	45,070	53,180	422,323
1951	38,289	386,239	10,637	42,233	2,557	54,286	51,483	482,758
1952	43,025	392,835	15,970	51,793	3,218	57,690	62,213	502,318
1953	43,510	379,443	18,908	53,059	2,660	58,756	65,078	491,258
1954	40,549	405,560	18,692	54,184	2,208	49,702	61,449	509,446
1955	45,323	427,640	21,319	75,167	2,862	59,289	69,504	562,096
1956	44,153	429,456	10,542	47,629	3,799	80,748	58,494	557,833
1957	42,933	424,797	4,680	19,161	1,945	48,430	49,558	492,388
1958	43,927	454,850	4,245	21,811	1,919	34,420	50,091	511,081

Stated in metric tons, 2,200 lbs.; and in Belgian francs at 50 F.= $1.

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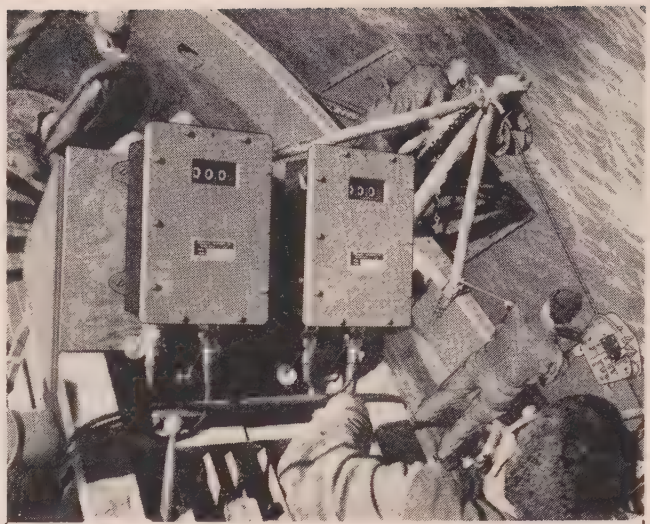

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COSTA RICA

• The fishery industry of Costa Rica is based on five products: table fish, tuna, shrimp, lobster and turtles. A sixth product might be listed as "other sea foods," including some varieties of oysters and clams; but there are no reliable statistics on this crop, because it is handled on a local basis. both as to production and marketing.

A fleet of about 23 shrimp boats operated on the Pacific side of Costa Rica in 1958. These boats range from 35′ to 65′ long, and use dragnets from 40′ to 80′ mouth. Some of the newer boats, or those with most modern equipment, operate more than one net, but most of them use a single net.

Sizes of shrimp caught off Costa Rica are from 10-and-less to 21-25, the larger percentage being in the 15-20 sizes.

Shrimp when caught are kept aboard in crushed ice. Landed, they are frozen in five-pound cardboard boxes. Most of Costa Rica's shrimp are exported to the U. S. A., the shipments in 1938 totaled 716.530 lbs.

Although the resource seems to be bountiful, and the market brisk, the Costa Rican shrimp industry today is a small-scale business, and suffers from instability. According to a report from the U. S. Embassy in Mexico, Costa Rican fishermen enjoyed a bumper season from June 1957 to June 1958, and the industry began to expand. New boats were laid down, and existing boats joined the fleet, but when the catch fell off, the fleet declined, some of the boats under construction were not finished, and some of the new recruits to the fleet deserted to other fisheries.

COSTA RICA PACIFIC SHRIMP AND FISH CATCH

	1956 Kilos	1957 Kilos	1958 Kilos
January	38,029	45,569	34,925
February	28,838	46,052	27,769
March	37,485	62,783	58,701
April	31,221	47,897	57,360
May	34,610	49,069	59,739
June	44,242	48,968	52,602
July	34,293	44,152	51,251
August	53,262	53,293	49,194
September	46,429	53,224	32,520
October	53,676	52,326	39,820
November	56,539	57,952	51,077
December	74,732	48,817	68,891
Total	533,356	610,102	538,849

Nevertheless, official figures from the Costa Rican Fish and Wildlife Administration show that the shrimp industry has grown steadily between 1952 (earliest year for which statistics were issued) and 1956. The catch dropped off in 1957 from around 190 metric tons to about 80, but the Fish and Wildlife people say that development of new shrimp fishing zones could push production up to three times its present level.

COSTA RICA SHRIMP

(In Kilos, Headed)

	1956	1957	1958
January	21,101	7,252	5,102
February	25,732	4,689	6,535
March	34,768	6,870	11,751
April	34,779	6,648	20,251
May	7,103	6,903	10,021
June	9,287	6,892	36,854
July	13,356	6,909	38,714
August	13,878	7,186	37,447
September	6,774	6,739	36,057
October	7,668	6,679	32,911
November	4,508	10,816	57,711
December	13,195	11,179	65,291
Total	192,149	88,762	358,645

• Lobster fishing, which yielded 145 metric tons in 1957-58 as against 41.5 metric tons the previous season, is entirely an Atlantic coast fishery. It is known, however, that some varieties of lobsters exist in the Pacific off the Costa Rican coast.

The lobster season extends from December to January inclusive, sometimes into February—two or two and a half months.

Methods are somewhat behind the times. Fishing is done by men in rowboats or outboard motor boats, many using traps made of bamboo with mangrove frames. Captured lobsters are taken ashore alive, and there placed in ice-water, beheaded, and the tails frozen. Most of the crop is exported to the U. S., but some frozen lobsters are sold in Costa Rica. The domestic market, however, mostly consumes live lobsters.

COSTA RICA LOBSTERS

Season	Number	Pounds
1951/52	2,035	2,422
1952/53	12,628	15,027
1953/54	6,057	7,208
1954/55	4,261	5,071
1955/56	26,250	31,238
1956/57	75,799	90,201
1957/58	267,749	318,621

Note—Weights calculated on the basis of 1.19 lbs. per lobster, live weight.

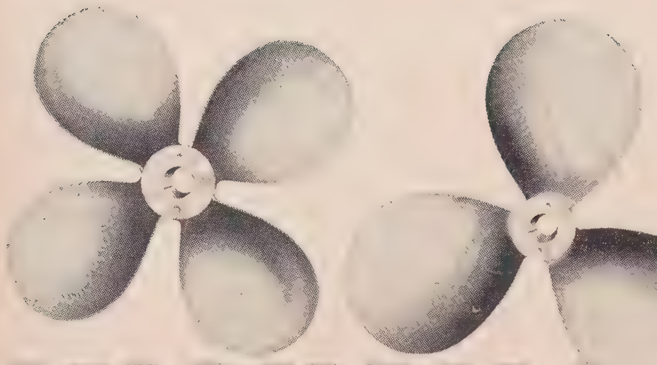
• The center of Costa Rican tuna fishing is Puntarenas, where there is one cannery. Tuna fishing is at present in a decline because of the disappearance of anchovetas, which are the big fishes' favorite bait.

The pack in Puntarenas' one cannery consists of Yellowfin and Bluefin tuna.

• Fresh fish is by far the leading commodity in the Costa Rica fishery, total production being quoted as 610.1 metric tons in 1957, from which eminence it dropped to 538.6 m. t. in 1958.

About 70% of Costa Rica's fresh fish is caught by the shrimp fleet and the methods of catching, transportation and sale are about the same for fresh fish as for shrimp, except that freezing is not as effective.

Fresh-caught fish is transported



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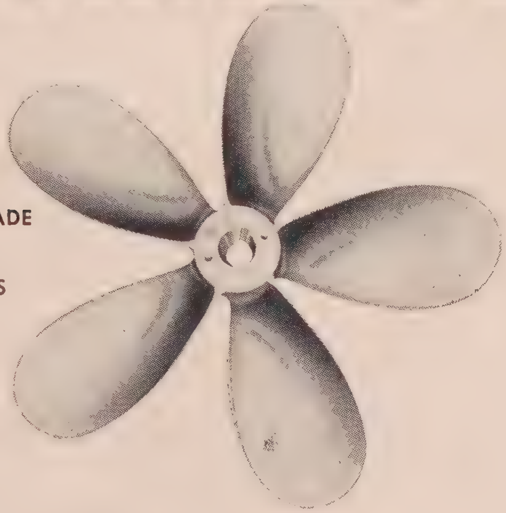

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mostly in crushed ice to the interior of the Republic where it is sold at retail and consumed. But some fish is frozen, and strangely enough fresh fish sells at higher prices than frozen, and is preferred by higher-income families.

- Green turtles, which are a great treat to all lovers of good food, are very plentiful in Costa Rica, swarming ashore every summer at Tortuguera, on the Atlantic side, to lay their eggs.

In recent years, fishermen have taken advantage of this laying period to hunt green turtle commercially. There is little or no processing involved, as the turtles are transported alive to the markets, mostly in the U. S., for very little is consumed in the Republic.

The catch of green turtles has suffered a net decline in the years 1951-57, dropping from 217.4 metric tons to 150.6 m.t. In 1956 the landings jumped from 149.5 m.t. to 839.0 m.t., dropping again in 1957 to 150.6. The turtle season runs from June to August inclusive, sometimes into September.

Government Aid

The Government, through the National Production Council, which is an autonomous agency for regulating and promoting national production, has taken certain measures to help the fishing industry. Among these are:

Price supports for fishery products for which there is a stable market. (The Council purchases surpluses unsold to consumers at the fixed price.)

Ceiling prices to the consumer for certain essential commodities (shrimp and lobster are not classified as essential).

Mutual bonding by the Council for fishermen who need bank loans to develop their businesses.

This plan, which has yielded some results, is subject to revisions as its effects become clearer.

- According to the Fish & Wildlife authorities, the leading commercial organization in the Costa Rican fisheries is the Camara de Pescadores de Puntarenas, or Puntarenas Chamber of Fisheries. President is Sr. J. Luis Moreno Borrase, Puntarenas, Costa Rica.

Leading shrimp exporting firms as listed by the Fish & Wildlife administration are:

Compania Empacamar, Ltda., Puntarenas, Costa Rica. Rodrigo Calvo Astua, manager.

Torres Hermanos, Ltda., Puntarenas, Costa Rica. Raul Torres Barboza, manager.

SHRIMP

- Consistent growth marked the new shrimp canning industry of the Pacific in 1959, third year in which it could claim industrial stature.

Pacific shrimping before 1957 was limited almost wholly to the fresh trade, with some picked shrimp meat frozen.

In 1957 Pacific shrimp canning began.

In 1958 it rocketed, but the supply in the grounds exploited proved variable.

In 1959, with a strong shift northward, the business expanded further, and on an apparently much more stable basis, with production of 188,400 cases, valued at $2.8 millions.

- The trend to Alaska, where the waters of Cook Inlet and the vicinity of Kodiak Island have joined those of Southeast Alaska as centers of productivity, has given the industry an apparently consistent supply of material, with another important advantage—larger shrimp.

The Alaska catches consist of at least three distinct varieties of spring, a significant proportion of which are of the larger "side stripe" and "coon stripe" varieties, with their bigger yield of higher-priced shrimp.

The industry still is in its infancy, with its exploration of productive seas only beginning, and with the usual abundance of problems besetting any new industry pioneering a new product in new areas.

Technical problems attendant upon Pacific shrimp canning appear largely to have been overcome by the end of 1959, although some trouble with black sulphide formation was reported in the fall of that year.

- For all of its greater stability and growth, Pacific shrimp canning cannot be said to have been attractively profitable in 1959, due in large degree to the prices paid for raw shrimp under the spur of competition, and to the expenditures attendant upon the introduction of a new product bearing the same name, but with a distinctly different character than the long-established Gulf canned shrimp.

The situation in Pacific canned shrimp marketing is somewhat analagous to that which confronted Pacific canned oysters when 25 to 30 years ago they were introduced to a market which had long been familiar, and satisfied, with Cove oysters.

Distributors of Pacific canned shrimp report remarkable consumer reaction and comment on the new Pacific product with its small size, sweet, delicate flavor, and attractive pink coloration.

- Shrimp canning on the Pacific has been made possible not only by discovery of supplies of shrimp sufficient to sustain the industry but also by the availability of machines capable of peeling the small size shrimp found on the Pacific coast with a degree of speed and effectiveness which makes the canning of these tiny, tender shrimp economically attractive.

Several new or re-located canneries

1959 - Pacific Canned Shrimp

COMPANY	Cannery Location	Cases, 48 Halves
E. H. Bendiksen Co.	South Bend, Washington	40,000
Crown Packers, Inc.	Hoquiam, Washington	4,970
Halibut Producers Cooperative	Seward, Alaska	13,250
Harbor Seafoods Co.	Bay Center, Washington	12,739
Harbor Seafoods Company	Wrangell, Alaska	18,050
Island Seafoods	Kodiak, Alaska	22,134
Pacific Shrimp, Inc.	Warrenton, Oregon	17,375
Seaside Clam Co.	Warrenton, Oregon	16,000
Seward Seafoods, Inc.	Seward, Alaska	2,000
Sutterlin & Wendt	Seldovia, Alaska	10,500
William Smith Co.	Wrangell, Alaska	21,000
Whitney & Company	Seldovia, Alaska	1,882
Miscellaneous	Alaska	8,500
	Total Alaska	97,316
	Total Washington	57,709
	Total Oregon	33,375
	GRAND TOTAL, cases	188,400
	GRAND TOTAL, value	$ 2,826,000

PACIFIC SHRIMP, Previous Years		Value	U.S. Std. Cases
1958 -	Alaska	$ 545,642	50,613
	Washington & Oregon	1,666,035	94,952
	TOTALS, 1958	$ 2,211,677	145,565
1957 -	Alaska	$ 164,437	16,444
	Washington & Oregon	512,082	32,794
	TOTALS, 1957	$ 676,519	49,238

entered the business in 1959. Sutterlin & Wendt shifted their operations from Grays Harbor to Seldovia, Alaska, where they were first planned for the former Cook Inlet Packing Co. cannery, but later were shifted into the Whitney & Co. plant.

Seward Seafoods got started in a small way at Seward in 1959, but expected to be in full production through 1960.

Halibut Producers Cooperative developed shrimp canning in connection with its plant at Seward, putting up a substantial pack.

A notable new plant, also at Seward, is that of Alaska Marine Foods, which with four Peelers machines installed ranks in capacity with any shrimp cannery on the Pacific.

- Washington's shrimp industry, which had skyrocketed following introduction of the first Peelers machines, slowed in 1959, with much of the interest and some of the equipment shifting to Alaska.

Oregon held fast to its gains with at least two plants active throughout the year on the Columbia River and other operators further south studying the trend of production and markets closely.

In British Columbia there was material expansion of the shrimp fishery, but utilization appeared to follow the hand-picked and frozen pattern rather than the canning which has become dominant in the Pacific states.

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Frozen
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1 lb. ctn.

Mullet
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●
Frozen
25 lb. ctn.
●
Salted
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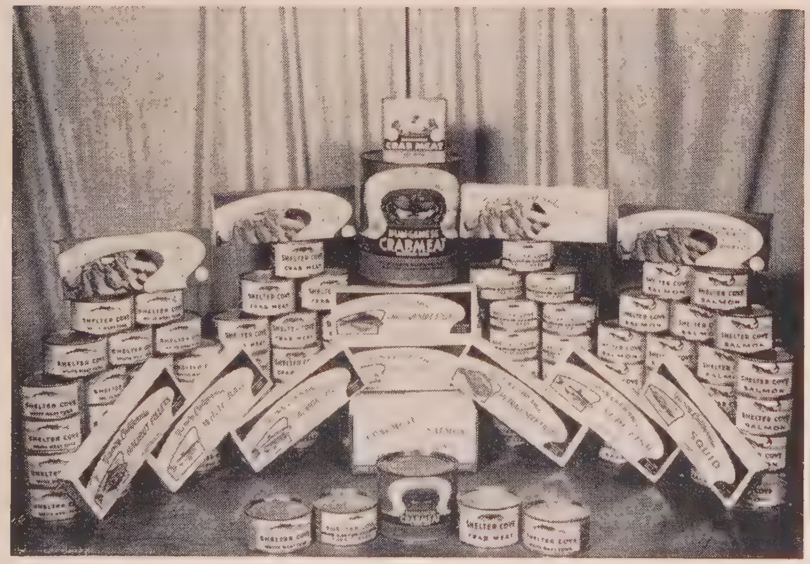

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1959 - FISHERY PRODUCTS IMPORTED FROM MEXICO -

(ENTERED THROUGH CALIFORNIA AND ARIZONA)

SPECIES	Pounds												
	Nov. '58	Dec. '58	Jan. '59	Feb.	March	April	May	June	July	August	Sept.	Oct.	TOTAL
FISH:													
Cabrilla	...	...	...	...	...	...	1,344	3,770	6,314	...	...	9,382	20,810
Corbina, fresh & frozen	6,471	17,106	71,203	206,587	272,107	118,024	1,382	4,586	809	5,289	2,453	2,585	708,602
Sea Bass: White & Black	...	...	...	...	...	...	3,907	1,610	...	9,080	...	6,113	20,710
Tortuava	...	81,534	45,072	140,489	23,586	307	...	87,062	47,222	...	...	...	425,272
Unclassified: fr. & frz.	9,479	32,060	45,818	41,115	31,702	32,877	21,974	34,756	6,690	2,941	7,020	12,990	279,422
Tuna	333,040	336,588	346,411	...	...	1,072,270	430,530	180,253	2,635,160	925,494	223,696	223,043	6,706,485
TOTAL FISH	348,990	467,288	508,504	388,191	327,395	1,223,478	459,137	312,037	2,696,195	942,804	233,169	254,113	8,161,301
SHELLFISH:													
Abalone: Fresh	...	...	...	...	...	...	...	13,900	49,400	6,905	42,910	31,061	144,176
Frozen	...	...	...	...	...	...	...	6,600	...	33,740	2,700	...	43,040
Canned	419,320	517,920	554,234	234,468	77,280	426,480	233,040	386,160	452,050	171,516	388,744	285,600	4,146,812
Dried	551	1,102	...	2,425	3,526	2,644	4,358	35,891	9,903	4,078	4,032	1,200	69,710
Fresh and Frozen:													
Clams and Clammeat	...	...	...	...	...	3,726	14,773	14,700	31,020	46,796	...	22,685	133,700
Shrimp	5,079,600	4,938,151	3,506,029	2,803,967	2,217,301	3,126,015	2,915,485	2,097,635	2,391,216	422,414	3,097,054	6,445,529	39,040,396
Spiny Lobsters	296,872	387,718	217,024	183,339	69,423	8,343	...	...	...	...	...	167,056	1,329,775
Unclass. Shellfish	...	...	...	...	...	...	...	...	...	...	...	...	....
TOTAL SHELLFISH	5,796,343	5,844,891	4,277,287	3,224,199	2,367,530	3,567,208	3,167,656	2,554,886	2,933,589	685,449	3,535,440	6,953,131	44,907,609
OTHER FISHERY PRODUCTS:													
Livers	...	14,341	14,590	16,357	14,225	51,810	16,544	20,410	26,714	13,167	2,812	6,506	197,476
Miscellaneous	81,000	108,000	...	54,404	108,000	135,000	27,000	162,000	162,000	108,000	226,945	160,000	1,332,349
Meal	113,500	105,900	25,000	22,500	47,500	157,800	128,400	105,552	181,600	48,000	19,248	26,400	981,400
Shark Fins	...	3,302	9,071	2,090	1,540	4,709	3,888	1,883	7,834	...	1,228	5,365	40,910
TOTAL PRODUCTS	194,500	231,543	48,661	95,351	171,265	349,319	175,832	289,845	378,148	169,167	250,233	198,271	2,552,135

- Alaska, which of course for many years was the center of Ocean Pink shrimp utilization through its cold-pack operations in Southeast Alaska, leaped ahead in the canning field in 1959, particularly the Central Alaska area, where a substantial portion of the catch is composed of larger varieties than the Ocean Pinks which dominate the North Pacific shrimp population and compose virtually the entire catch elsewhere.

As result of the presence of the larger shrimp. which in general are characterized by white meat with red pointings, rather than the basic pink of the smaller varieties, permitted size grading of the canned pack to "tiny", "small" and "medium". These grades conform to national shrimp usage rather than being descriptive of the Pacific shrimp, the "small" actually representing far-above-average among North Pacific shrimp.

- Significant shrimp development on the Pacific Coast of North America moved northward in 1959 and showed signs of settling in Alaska.

This trend involved the small "Ocean Pink" and other cold water varieties of shrimp; and of course does not involve Mexico's fine, big white shrimp from the Gulf of California, the mainstay of that country's shrimp exports to the United States.

Where United States shrimping a few years ago developed a new fishery off the California coast, the northward movement followed the introduction to the Pacific Coast of shrimp peeling

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MEXICAN SHRIMP EXPORTS THROUGH CALIFORNIA AND ARIZONA

1958-59				1957-58			
MONTH	Fresh Pounds	Frozen Pounds	Total Pounds	MONTH	Fresh Pounds	Frozen Pounds	Total Pounds
November 1958	481	5, 079, 119	5, 079, 600	November 1957	4, 972	3, 309, 327	3, 314, 299
December 1958	--	4, 938, 151	4, 938, 151	December 1957	528	2, 807, 575	2, 808, 103
January 1959	130	3, 505, 899	3, 506, 029	January 1958	--	2, 554, 629	2, 554, 629
February 1959	--	2, 803, 967	2, 803, 967	February 1958	--	1, 030, 378	1, 030, 378
March 1959	391	2, 216, 910	2, 217, 301	March 1958	--	1, 737, 434	1, 737, 434
April 1959	1, 817	3, 124, 198	3, 126, 015	April 1958	--	591, 366	591, 366
May 1959	1, 357	2, 914, 128	2, 915, 485	May 1958	2, 060	1, 474, 473	1, 476, 533
June 1959	530	2, 097, 105	2, 097, 635	June 1958	60	1, 476, 489	1, 476, 549
July 1959	30, 109	2, 361, 107	2, 391, 216	July 1958	--	1, 943, 286	1, 943, 286
August 1959	17, 460	404, 954	422, 414	August 1958	37, 850	1, 771, 468	1, 809, 318
September 1959	955	3, 097, 054	3, 098, 009	September 1958	2, 180	3, 327, 277	3, 329, 457
October 1959	--	6, 439, 809	6, 439, 809	October 1958	1, 350	6, 326, 994	6, 328, 344
TOTAL	53, 230	38, 982, 401	39, 035, 631	TOTAL	49, 000	28, 350, 696	28, 399, 696

machines which made economic the utilization of the tiny Pacific shrimp.

Exploration showed abundance increase to the north, and by 1959 California shrimping was concentrated in the northernmost segment of that state's coast, with 1.3 million of California's 1.7 million pounds caught in 1959 being taken immediately south of the Oregon lines.

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GOLD EAGLE BRAND

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- California's shrimp catch is controlled by four district quotas, totaling 2,300,000 lbs. However, in 1959 the quotas were attained only in the two districts north of Point Arena, the southerly districts falling far short of their ratings.

Total catch for the year was 1,777,847 lbs., about 50,000 lbs. over the previous year. (Weights are for whole shrimp.)

The year was marked by increased fishing effort, more know-how on the part of fishermen, and more efficiency in boats, gear, and crew, according to Department of Fish & Game officials who are most interested in this comparatively new fishery, which in a large part was developed through its research.

In 1952 only four trawlers were in the trade. Two of them caught 90% of the catch. In 1959 more than 11 boats operated.

Again, as in 1958, the Eureka-Crescent City area was the most productive. Here some 1,317,972-lbs. were landed in 1959 as compared to 1,139,000-lbs., in 1958. To the 1959 catch must be added an estimated additional 380,000-lbs. of California shrimp from the area, which were landed at Brookings, Ore.

In the Eureka-Crescent area among the plants receiving shrimp were: Tom Lazio Fish Co., Eureka Fisheries, Inc. (Hunter & Foland Fish Co.), Wojcik & Swiss, Inc., West Coast Crab Co., and California Shellfish Co. Some plants processed the catch on the spot and others shipped shrimps to other points for processing.

The Fort Bragg area was next largest producer with 444,998-lbs. for 1959 as compared to 333,000-lbs. landed in 1958. Receiving and processing were: A. Paladini, Inc., F. Alioto Fish Co., and Meredith Fish Co.

Although Bodega Bay produced 172,000-lbs. in 1958, the 1959 season was a complete bust there, with no shrimp being landed. The same was practically true of Morro Bay, where in 1958 90,000-lbs. were landed and only 14,904 in 1959.

Decline of the catch in the Central California area is attributed by Fish and Game researchers to a lack of recruitment of one-year-old shrimp in the catch at Bodega Bay and Morro Bay.

Shrimp fishing gear off the California coast is limited to parts of the continent, especially in British Columbia and Alaska. A beam trawls with 1½" mesh. Sometimes an A-frame is mounted on deck for handling the trawl. Trawl line is regular half-inch wire rope, and webbing is mostly cotton.

Average length of the trawl is about an hour and a half. The depth varies —40-50 fathoms off Bodega Bay, 80-120 fathoms off Morro Bay, with Fort Bragg, Crescent City and Eureka in between.

The average price to fishermen during the season was 10¢ per lb.

The shrimp meat is vacuum packed in 5-lb. cans, and much of it is fresh frozen. No peeling machines are used in the California industry since the size of the shrimps is small. They are picked by hand. The average count per pound during the season was 117 per lb.

The shrimp fleet in the Eureka-Crescent City area ranged from three boats in May to 10 in July, and they made 1,095 tows requiring 20,066 hours. The average catch per fishing hour was 638-lbs. The 1958 catch-per-hour was 501-lbs.

In July when the landings were approaching the 1,000,000-lb. quota mark (about 800,000-lbs.), the fishermen were given a two week's notification of closure effective August 2. An increase in the quota was granted by the Fish & Game Commission and the area was reopened a month later, from Sept. 4-17. The average catch per hour for this two week period was 613-lbs. The fleet operated out of Crescent City for the entire season.

Major shrimping effort was off the Klamath River and Redding Rock in depths of 52-90 fathoms. The average depth fished was 65 fathoms.

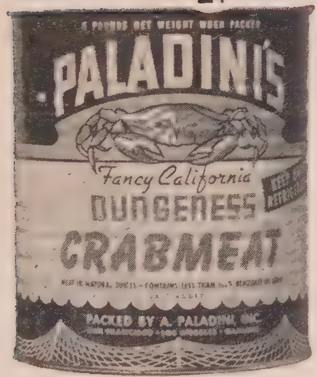
The average heads-on count for the season in this area was 121 per lb.

The 200,000-lb. quota in the Fort Bragg area was reached by the end of May. An additional 200,000-lb. quota was granted by the Fish & Game Commission and vessels continued fishing.

Six vessels worked this area during the 1959 season. They made 550 tows requiring 875 hours. The average catch per fishing hour was 579-lbs., compared with the 1958 figure of 433-lbs. However, the 1959 average catch per hour dwindled from 656-lbs. in May to 464-lbs. in June and 222-lbs. for the nine days in July. The fleet operated out of Fort Bragg the entire season.

Major shrimping effort was in the Cape Vizcaino-Westport area, some 5-10 miles south of where the shrimp were caught in 1958. The fleet concentrated its activities in a 5-mile long area having an average depth of 74 fathoms. Depths ranged from 50 to 120 fathoms.

At the start of the season Leonard Carpenter, skipper of the trawler *Donna* initiated the use of an unweighted foot-rope of small diameter on one of his beam trawl nets. Considerably fewer fish and invertebrates were caught with this net and sorting problems were practically eliminated. It was not long before the rest of the shrimp boat skippers in the



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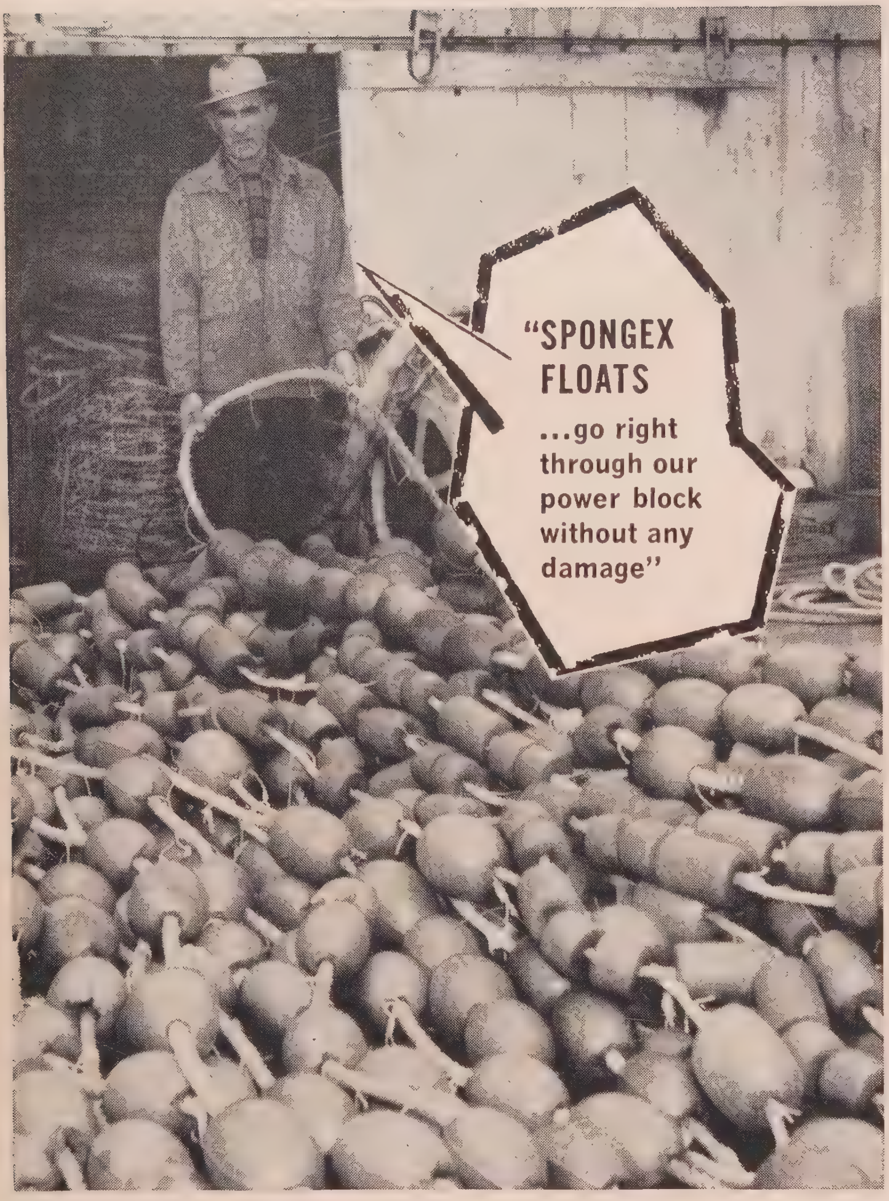

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SPONGE PRODUCTS BY B.F.Goodrich

Fort Bragg area changed to this type of foot-rope.

Heads-on counts of catch samples were made during the three months of the season at Fort Bragg and the average count was 95-per lb., ranging from an average of 108 in May to 82 in August.

Limited shrimping effort was made in the Morro Bay area due to rough weather and lack of shrimps. One vessel worked the area intermittently from May to July and another boat from Bodega Bay spent two days exploring in August.

The principal shrimping area during the season was off Pt. San Luis at an average depth of 89 fathoms.

Heads-on shrimp counts for May, June, July and August averaged 78, 80, 72, and 79 per lb. respectively.

U. S. Shrimp Imports, 1959

Country	Jan.-Oct. 1959 (In 1,000 Lbs.)	Jan.-Oct. 1958 (In 1,000 Lbs.)
Mexico by Customs District:		
Florida	167	134
New Orleans	2,634	2,317
Laredo	18,390	16,639
El Paso	110	13
San Diego	1,143	1,304
Arizona	30,936	20,577
Los Angeles	34	61
St. Lawrence	1	
Total Mexico	53,415	41,045
British Honduras	83	4
Greenland	.....	41
Canada	130	162
El Salvador	1,337	860
Guatemala	182	39
Honduras	182	529
Nicaragua	201	201
Costa Rica	1,068	480
Panama	7,680	6,215
Canal Zone	64	193
Bahamas	.....	4
Cuba	229	353
Jamaica	48	....
Colombia	1,531	677
Venezuela	356	87
British Guiana	530	...
Surinam	184	38
Ecuador	4,000	3,764
Peru	189	428
Chile	262	133
Brazil	79	....
Argentina	936	440
Iceland	19	16
Sweden	7	4
Norway	123	120
Denmark	191	36
United Kingdom	62	2
Netherlands	1	1
Western Germany	82	53
Finland	1	....
Spain	112	155
Italy	185	169
Lebanon	5	....
Turkey	2	5
Iran	560	....
Israel	43	7
India	2,308	1,262
Pakistan	481	422
Singapore	1	....
Philippines	1	5
Vietnam	1	1
Thailand	35	....
Korea	142	100
Hong Kong	619	3,398
Taiwan	15	....
Japan	6,499	2,166
Australia	284	339
Egypt	1,210	375
Grand Total	85,675	64,329

OYSTERS

- Pacific oyster operations advanced moderately in 1959, but without showing any striking growth trend.

The industry enjoyed a stability not always recorded, and consolidated gains against anticipated expansion in yield and market.

Canning of oysters and oyster stew both held close to the marks of former years, but it appears that both in fresh and frozen oysters some advances were made.

Imports continued at a level comparable with that of previous years, and without creating the alarm within the domestic industry which had been noted in former years as the imports from Japan rose sharply.

- Technical advances in oyster freezing bear much of promise, and to them can be traced perhaps the most significant of all 1959 developments — the undertaking at Hiroshima of a modern oyster freezing and canning enterprise by Nichiro Gyogyo Kaisen Kaisha, one of the world's great fishery corporations. This project is being developed in the spring of 1960 in connection with the Coast Oyster Co.

Pacific Canned Oysters and Oyster Stew

CANNED OYSTERS (Cases of 48 cans)				SEASON	CANNED OYSTERS STEW (Cases of 48 cans)		
No. 1 E.O.	"Buffet"	Other Sizes	TOTAL Basis Std. Cases	1958-59	No. 1 E.O.	"Buffet"	TOTAL Basis Std. Cases
53, 301	62, 243	2, 359	106, 881		194, 791	27, 363	216, 683

PACIFIC CANNED OYSTERS, equivalent of standard cases of 48 No. 1 E.O. packed in -

		1954	100, 687	1948	83, 489	1942	72, 315	1936	118, 853
		1953	114, 687	1947	57, 205	1941	178, 445	1935	88, 062
1958	131, 266	1952	112, 415	1946	89, 050	1940	148, 870	1934	68, 323
1957	128, 493	1951	132, 140	1945	3, 184	1939	112, 549	1933	32, 315
1956	109, 559	1950	120, 742	1944	none	1938	111, 348	1932	12, 233
1955	124, 497	1949	113, 989	1943	583	1937	110, 872	1931	7, 930

PACIFIC CANNED OYSTER STEW, by seasons, basis standard cases of 48 No. 1 E.O. cans.

1957-58	268, 907	1955-56	182, 179	1953-54	134, 111
1956-57	273, 288	1954-55	170, 058	1952-53	78, 536

Plantings of Imported Pacific Oyster Seed

YEAR	WASHINGTON				OREGON			California	British Columbia	TOTAL	YEAR
	Willapa Harbor	Grays Harbor	North Puget Sound	South Puget Sound	Coos Bay	Yaquina and Alsea	Tillamook				
1947	22, 933	5, 230	6, 025	4, 117	8, 200	. . .	7, 157	750	(a) 2, 292	56, 704	1947
1948	14, 685	1, 150	5, 562	1, 962	3, 400	1, 550	1, 005	850	2, 675	32, 839	1948
1949	17, 357	7, 425	6, 429	4, 748	290	1, 930	2, 500	350	4, 844	45, 873	1949
1950	16, 512	1, 550	6, 830	5, 745	4, 425	1, 300	3, 575	565	5, 204	45, 706	1950
1951	18, 569	2, 250	8, 685	7, 119	6, 749	1, 500	1, 274	350	(b) 5, 404	51, 900	1951
1952	40, 526	. . .	15, 335	7, 954	455(e)	. . .	5, 625	250	(c) 3, 584	73, 729	1952
1953	31, 669	4, 900	22, 583	(d)	. . .	. . .	(e) 8, 810	250	1, 435	69, 647	1953
1954	32, 087	7, 325	12, 210	10, 528	. . .	. . .	(e) 953	2, 526	1, 576	67, 205	1954
1955	30, 424	846	8, 132	11, 273	250	176	386	9, 850	(f) 1, 875	63, 212	1955
1956	50, 113	1, 333	6, 155	16, 458	. . .	. . .	(e) 1, 000	24, 538	3, 240	102, 837	1956
1957	22, 388	6, 066	6, 652	(g) 9, 035	. . .	. . .	(e) 1, 143	11, 200	3, 382	59, 866	1957
1958	16, 083	5, 610	1, 708	(g) 15, 945	. . .	. . .	(e) 2, 619	11, 830	3, 360	57, 155	1958
1959	21, 342	7, 300	472	13, 004	. . .	. . .	(e) 5, 199	9, 460	1, 270	58, 047	1959

(a) Includes 100 cases planted in Alaska. (b) Includes 4 cases planted in Alaska. (c) Includes 7 cases planted in Alaska. (d) Included with North Puget Sound.
(e) Includes all Oregon Coast points. (f) Includes 18 cases planted in Alaska. (g) Includes 260 cases transshipped to Alaska in 1957 and 550 to Alaska in 1958.

NOTE: Seed plantings in 1958 include 1, 202 cases of Kumamoto seed, 586 planted in Washington and 616 planted in Oregon; also 30 cases of Suminoe in Washington.

of South Bend, Wash., largest of Pacific Coast oyster operators, in which both the British Columbia Packers, Ltd., and the Van Camp Sea Food Co. have interests.

- Pacific oyster seed planting in 1959 held close to the pattern of previous seasons with 58,000 cases of seed going into the water, about 42,000 of them in the State of Washington. California plantings were down somewhat from the high levels of the three previous years.

- British Columbia's oyster industry showed moderate, healthy growth through 1959; and continued largely in the fresh oyster trade, with some extension in frozen oysters with marked improvement in technique.

Fresh oyster trade volume, as officially reported by the Canadian Department of Fisheries, showed sales in 1959 of 74,632 gallons of shucked oysters, against 62,834 gallons in 1958.

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CLAMS

● Pacific clam canning picked up in 1959 from its dismally low level of 1958, but remained far below former marks, or the average of the past decade.

Depression in this industry results essentially from competitive factors.

This competition with which Pacific clam canning has so much trouble in coping comes from domestic as well as foreign sources.

Cost is the consideration, not quality; although it must be acknowledged that the Atlantic sea clams and the Japanese baby clams have very real merit.

● Pacific razor clam canning in 1959 exceeded that of the previous year by about 50%, due almost wholly to the resumption of operations in a limited way in the Copper River area, where diggers' price demands in 1958 virtually suspended operations for the year.

The 1959 pack of razor clams was 32,601, a bare quarter of that produced in 1932, the peak year.

● Specific handicaps of Pacific clam canning derive from these points:

1. Mechanical harvesting has not yet been applied to Pacific clamming—in part because of legal restriction—as it has on the Atlantic Coast, where clam canning has risen to new stature under the advantage of mechanical digging.

2. Labor costs, and notably in the price of the raw material dug by hand, are far out of line with those of Japan, principal foreign source of competitive products.

3. Abundance of clams suitable for canning is not great on the Pacific Coast.

● In an effort to offset these disadvantages, Pacific state authorities and industrial operators have sought to determine the possible seaward extension of productive clam bottoms; mechanical methods which might be utilized for harvesting such beds if they exist; and possibility of transplanting clams from other areas to the Pacific Northwest and Alaska.

Milo Moore, Washington director of fisheries, has done much along these lines, and early in 1960 announced planting of a substantial quantity of spawning-size Atlantic quahaugs to suitable muddy beaches in the southern areas of Puget Sound. Test plantings of these clams on beaches not suitable for native Pacific clams have proven sufficiently successful to encourage this large introduction.

The 1960 plant was made from a ton of quahaugs, imported from Massachusetts. The shipment totaled between 15 and 16 thousand clams from two to three inches in length.

Previous test plants of quahaugs (*Mya arenaria*) have proved successful, but this is the first large scale transfer of the shellfish from the East coast. The plantings will be followed by other plants in the San Juan islands in selected mud flat areas.

The Department has under way a survey of public tidal areas to determine practical means of transplanting seed clams (both native and imported) from abundant areas to public clamming beaches and deep water areas and for the distribution of native and cultured varieties of clam seed produced by laboratory rearing.

Transplanting to Puget Sound waters of the "Manila" clam from the Orient, introduced accidentally with Japanese oyster seed some years ago, has given the Pacific Coast of North America a new variety of prolific hardshell clam scarcely distinguishable from the native "little neck" variety.

1959 - PACIFIC CANNED CLAM PACK

COMPANY	CANNERY LOCATION	1-lb. Talls, 48	No. 10 Or No. 2	1/2-lb. 48	GRAND TOTAL Basis Halves, 48
RAZOR CLAMS:					
Alaska Packers Association	Cordova, Alaska	40	---	12,645	12,685
	Kodiak, Alaska	---	---	13,180	13,180
Big Point Sea Foods Co.	Big Point, Alaska	---	---	100	100
Mohawk Packing Co.	Moclips, Washington	---	---	1,680	1,680
Plumb Canning Co.	Copalis, Washington	---	---	3,981	3,981
Seaside Clam Co.	Warrenton, Oregon	---	---	975	975
TOTAL Razor Clams		40	---	32,561	32,601
HARDSHELL CLAMS:					
Guilford Canning Co.	Port Townsend, Washington	1,149	1,500	1,204	6,502
	TOTAL, ALL CLAMS	1,189	1,500	33,765	39,103

WASHINGTON RAZOR CLAM PRODUCTION

YEAR	COPALIS BEACH (Pounds)			GRAYLAND BEACH (Pounds)			LONG BEACH (Pounds)			KALALOCK, etc.	Total Catch All Beaches
	# of Digs	Total Catch	Per Dig	# of Digs	Total Catch	Per Dig	# of Digs	Total Catch	Per Dig	Total Catch-Pounds	(Pounds)
1937	20,695	546,486	26.4	9,026	285,317	31.6	2,986	99,591	33.4	46,478	997,872
1938	37,064	1,366,441	36.9	20,765	882,619	42.5	9,410	364,383	38.7	44,670	2,650,355
1939	23,903	846,633	35.4	11,182	433,796	38.7	11,321	653,992	57.7	30,692	1,965,113
1940	25,343	604,338	23.8	13,582	347.435	25.5	25,115	1,159,123	46.1	14,886	2,125,782
1941	12,389	406,393	32.8	2,643	111,819	42.3	3,307	222,129	67.2	806	741,147
Reserve	7,965	347,693	43.7	...	...	...	...	...	...	...	...
1942	5,088	143,148	28.1	814	26,283	32.3	3,941	174,104	44.2	*	343,535
1943	5,284	164,907	31.2	1,005	24,728	24.1	799	20,627	25.8	*	210,262
1944	8,485	409,374	48.2	2,705	105,425	38.9	2,651	108,030	40.7	*	622,829
1945	14,519	1,124,965	77.5	5,289	512,298	96.9	4,255	418,673	98.4	1,235	2,057,171
1946	12,387	922,516	74.5	10,548	461,773	43.8	11,109	663,776	59.8	*	2,048,065
1947	16,681	1,164,321	58.5	6,564	305,122	46.5	9,105	544,657	59.7	*	2,014,100
1948	18,263	687,612	37.6	6,642	249,869	37.6	8,489	268,862	31.8	50,350	1,256,693
1949	14,496	475,649	32.8	5,412	177,227	32.7	1,220	42,169	34.5	26,686	721,731
1950	11,878	231,879	26.9	...	...	...	...	...	...	5,303	237,182
1951	14,583	700,173	48.0	...	...	...	...	...	...	...	700,173
1952	17,630	651,733	37.0	...	...	...	...	...	...	39,595	691,328
1953	13,203	504,050	38.1	...	...	...	724	60,267	83.2	28,863	593,180
1954	8,407	550,524	63.2	...	...	...	152	11,759	77.3	35,018	597,301
1955	7,859	614,061	78.1	...	...	...	224	24,666	110.0	110,682	749,409
1956	10,054	416,884	41.3	...	...	...	**	92,947	**	187,028	696,859
1957	9,180	521,603	56.8	...	...	...	658	79,814	121.3	155,796	757,213
1958	12,549	790,201	63.0	...	...	...	543	58,003	106.8	181,343	1,029,547
1959	16,924	731,936	68.5	...	...	...	654	47,643	72.8	203,150	982,729

NOTE: In 1950 the catch per dig was computed only on pounds sold, which equaled 5,205 digs for 140,017 lbs. 91,862 lbs. of the quota were not sold and the number of digs for this unsold portion does not agree with the digs and pounds sold.

* The small amount is included with Copalis Beach.

** Not available.

● Pacific razor clam populations appear to be in good condition, and well stabilized under the system of quota management in effect in Washington and Alaska. Under this plan of administration, biologists estimate from the abundance of immature clams the crop which can safely be taken from the several year classes as they reach legal size; the quota being set within this estimate.

The population appears stabilized on a sustained yield basis in Washington and the principal producing areas of Alaska; but possibilities of substantial increase in yield are attractive only in extension to Westward areas of Alaska. This would require courageous economic venturing in the face of present day domestic and foreign competition.

● One of the notable changes of 1959 in Pacific clam industry was the sale of the G. P. Halferty operating properties to Alaska Packers Association.

The Halferty interests, headed by G. P. Halferty, and founded by his father, P. J. Halferty, originated Pacific clam canning at Warrenton, Ore., and through two generations have expanded and led it.

This oldest of clam canners—always a personal business—passed in 1959 to one of the oldest of salmon canners, itself a component of one of the world's largest food canning corporations.

PACIFIC CLAM PACK IN PREVIOUS YEARS

YEAR	(Basis 48 halves per case) RAZOR CLAMS				YEAR	(Basis 48 halves per case) HARD SHELL CLAMS			
	Alaska	Wash. & Oregon	B.C.	TOTAL		Alaska	Wash.	*B.C.	TOTAL
1929	28,270	63,526	13,050	104,846	1929	....	19,514	21,547	41,061
1930	33,937	54,746	12,623	100,324	1930	600	27,735	18,738	46,073
1931	43,460	53,412	8,658	105,440	1931	2,600	19,516	18,043	40,159
1932	69,147	46,002	8,457	123,606	1932	76	13,264	9,201	22,541
1933	38,213	38,772	....	76,985	1933	....	22,438	20,432	45,163
1934	31,655	30,232	....	61,656	1934	....	25,880	11,630	37,510
1935	34,864	53,057	....	87,921	1935	....	37,249	20,418	57,667
1936	29,900	49,692	....	79,592	1936	....	45,222	25,158	70,380
1937	29,044	20,373	....	49,417	1937	....	45,788	25,174	70,962
1938	42,305	64,167	....	106,472	1938	....	40,007	44,310	84,317
1939	35,258	60,205	....	95,463	1939	....	39,165	10,862	50,027
1940	41,556	51,705	....	93,261	1940	....	35,250	7,151	42,402
1941	22,736	27,629	....	50,365	1941	....	22,380	6,772	29,152
1942	46,703	3,999	5,568	56,270	1942	....	10,972	12,240	23,212
1943	48,692	1,732	5,821	56,275	1943	2,457	2,902	11,642	§34,001
1944	47,050	3,512	**	50,562	1944	11,630	19,863	**	§71,024
1945	43,476	38,152	**	81,628	1945	6,029	11,752	4,693	22,474
1946	51,594	51,063	**	102,657	1946	14,441	20,574	23,867	98,826
1947	24,726	42,970	....	67,696	1947	323	15,301	**	15,624
1948	34,425	11,720	....	46,145	1948	92	12,600	....	12,692
1949	42,103	4,482	923	47,518	1949	125	16,449	9,794½	26,368½
1950	54,534	849	1,583	56,966	1950	....	8,919	8,456	17,375
1951	44,082	11,014	3,196	58,292	1951	15	13,981	15,460	29,456
1952	25,960	9,843	***	35,803	1952	179	§§13,544	24,592	38,315
1953	39,234	8,449	5,183	52,866	1953	164	§§13,281	19,249	32,694
1954	31,463	5,541	8,413	45,417	1954	1,634	22,336	23,717	47,687
1955	45,931	10,386	....	60,117	1955	14	24,755	6,780	31,549
1956	34,267	6,005	3,539	43,811	1956	....	§22,117	**	22,117
1957	32,716	6,054	3,076	41,846	1957	....	§27,696	**	27,696
1958	11,540	6,545	2,907	20,992	1958	....	4,634	**	4,634
1959	25,965	6,636	N.A.	32,601	1959	....	6,502	N.A.	6,502

§ Total includes clams canned in California from clam meats produced in Mexico.

§§ Includes a small amount canned in California.

* British Columbia figures for years 1932 to 1947 and 1951, 1952 and 1953 include some Razor Clams. **British Columbia totals not available.

***Included with Hardshell.

NOTE: - Data for current year from original sources. Data for previous years are from official sources, converted to Pacific standard cases of 48 Halves.

CRAB

- King crab outstripped Dungeness in American crab canning in 1959 for the first time, Alaska's reviving interest in this resource producing 59,404 cases.

The Pacific states taken together canned 51,735 cases of Dungeness crab, the smallest pack since 1955 and far below the average.

In addition to the increased production of canned King crab, it appears that the pack of this product in frozen form also advanced over previous years, and perhaps to a new record.

- Surprising character of the 1959 King crab production may be repeated or exceeded in 1960, on the basis of early operations at least.

With the closing weeks of 1959 the Alaska King crab packers encountered very heavy fishing, particularly in the vicinity of Alitak, on the southwest corner of Kodiak Island.

By early January this abundance had put a larger fleet in the area than had ever been recorded as fishing King crab in Alaska.

With additional plants as well as additional boats in the Kodiak-Cook Inlet area, substantial production was anticipated for 1960.

- Dungenses crabs were moderately abundant throughout the northern part of their range in 1959, although California fishing was poor.

However, the price demanded by the fishermen during the early part of the principal producing season was discouraging to operations, in view of the weakness of the canned market. As result, a number of firms which normally take an active part in crab canning withdrew altogether, while others restricted their activity.

Toward the end of the year the price moved up under the spur of shortage, but the ocean price tended to rise also. Late in 1959, and looking into 1960, the fishermen at the principal crab landing ports in the Pacific Northwest were asking, and generally receiving, 14¢ per lb., ocean run. This could again be expected to have a limiting effect on crab canning.

- Regulatory changes effective in the King crab fishery of Alaska in 1960 are expected to have substantial effect in the shaping of the future of that business.

They were initiated this year by the State of Alaska, which with the first of 1960 received from the Federal government full control over its fisheries for the first time.

Most significant of these changes in regulation were the application to King

1959 - Pacific Canned Crab

COMPANY	Cannery Location	Cases, basis 48 Halves
ALASKA		
KING CRAB:		
Alaska King Crab Co.	Kodiak	9,608
King Crab, Inc.	Kodiak	11,418
Pacific American Fisheries	King Cove & Alitak	24,534
Pan-Alaska Fisheries	Ouzinkie & Homer	14,173
	Total KING CRAB	59,404
DUNGENESS CRAB		
Coastal Glacier Seafoods Co.	Hoonah	1,161
Fox Seafoods Co.	Shulze Cove	680
Pt. Chehalis Packers	Cordova	5,406
Nelson Crab & Oyster Co.	Cordova	500
Wm. Smith	Tenakee	700
N. E. Thompson Packing Co.	Kake	2,000
Totem Seafoods	Tenakee Springs	466
	Total DUNGENESS CRAB	10,233
TOTAL ALASKA CRAB, both species		69,637

COMPANY	Cannery Location	Cases, basis 48 Halves
WASHINGTON		
DUNGENESS CRAB:		
Chinook Packing Co.	Chinook	531
Crown Packers	Hoquiam	977
Harbor Fish Co.	Aberdeen	60
Harbor Seafoods Co.	Bay Center	1,510
Nelson Crab & Oyster Co.	Tokeland	17,900
Pacific Pearl Frozen Foods	Aberdeen	5,888
Pt. Chehalis Packers	Westport	5,406
	TOTAL WASHINGTON	32,272
OREGON		
Chuck's Seafood	Charleston	50
Point Adams Packing Co.	Hammond	9,180
	TOTAL OREGON	9,230
	TOTAL DUNGENESS CRAB, ALL AREAS	51,735
	TOTAL KING CRAB	59,404
GRAND TOTAL, UNITED STATES PACIFIC CRAB		111,139

OREGON CRAB LANDINGS

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
	Dozen												
1945	17,006	19,199	17,315	41,706	47,675	43,305	10,820	10,413	4,226	9,135	9,807	12,419	243,026
1946	17,065	21,815	30,732	34,074	80,626	34,414	13,694	5,783	4,568	8,859	12,834	14,814	279,278
1947	22,660	27,457	40,555	46,527	78,649	50,317	20,806	7,188	3,813	3,686	8,621	3,971	314,250
1948	35,592	37,973	63,516	87,353	96,885	34,841	15,171	9,098	4,969	4,205	2,662	9,206	401,471
1949	49,617	22,681	52,571	60,613	73,273	45,310	19,539	11,433	4,828	4,770	8,914	20,312	373,861
1950	22,414	26,186	38,315	35,513	46,910	27,012	6,997	4,145	3,914	3,095	9,730	25,864	250,095
1951	34,161	39,080	41,361	49,042	54,348	11,740	4,764	3,742	2,065	....	....	....	240,303
1952	19,864	23,672	28,024	42,256	45,842	11,150	5,268	3,577	2,233	5,618	15,981	14,780	218,265
1953	15,790	28,080	49,241	58,797	60,383	18,252	6,143	3,822	2,769	4,087	17,105	58,339	322,808
1954	61,369	62,746	86,731	72,434	36,170	7,789	5,054	3,666	1,896	2,849	16,334	30,034	387,072
1955	37,850	44,103	39,902	30,658	25,931	13,498	6,732	3,540	2,434	6,882	21,834	33,863	267,227
1956	31,828	28,271	55,700	70,457	65,922	28,469	7,847	4,369	3,080	3,169	15,672	29,650	344,434
1957	68,638	53,288	59,565	81,651	73,596	39,950	28,434	13,877	3,857	5,494	26,880	25,437	480,667
1958	81,009	52,045	91,881	61,139	39,038	17,026	6,369	4,660	2,934	2,756	25,862	60,537	445,256
1959	47,884	35,950	35,457	33,687	28,462	6,816	2,782	1,780	2,268	*	*	*	195,086

*Figures not available.

crab fishing of a stringent area licensing requirement which will serve to reduce the ability of King crab fishermen to move their activities from one area to another in the same year with shifting abundance of crabs. Some observers incline to the belief that this will reduce production by making it uneconomic for fishermen to engage in King crab fishing on a full-time basis; and will tend to limit crab fishing to part-time activity during the closed season for salmon and other species.

Prohibiting of trawl fishing for King crab in the Kodiak regulatory area is seen by some operators as applying a serious brake to exploration for new grounds.

Another limiting regulation restricts the number of pots which can be fished by any one vessel, thus tending to discourage any but rather small craft from engaging in King crab fishing.

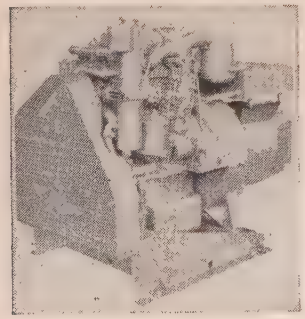
- Several notable business changes marked the Alaska King crab indus-

Pacific Canned Crab

(Shown in Standard Cases of 48 half-pound Cans)

YEAR	Alaska	Washington	Oregon	California	American Total		British Columbia	North American Total	YEAR
					Cases	Value			
1959	69,637	32,272	9,230	...	111,139	$ 3,016,091	N.A.	111,139	1959
1958	48,494	52,429	11,653*	...	112,576	2,473,526	13,369	125,945	1958
1957	49,361	45,970	10,818	303	106,552	2,360,644	9,954	116,506	1957
1956	41,300	32,512	9,904	660	84,376	1,988,351	11,871	96,247	1956
1955	24,534	9,450	2,959	156	37,099	972,610	7,942	45,041	1955
1954	41,642	36,141	24,717	362	102,862	2,618,464	9,717	112,579	1954
1953	21,026	15,482	7,898	146	44,552	1,303,606	5,037	49,589	1953
1952	22,647	9,076	9,624	237	41,584	1,173,211	5,148	41,584	1952
1951	26,753	19,885	39,878	1,500	88,016	2,332,424	4,159	88,016	1951
1950	25,927	23,270	28,075	1,260	78,532	1,868,680	7,283	85,815	1950
1949	13,198	65,004	36,652	...	114,854	2,547,765	4,839	119,693	1949
1948	26,076	104,362	56,982	3,500	187,420	4,264,622	3,500	190,920	1948
1947	10,158	54,756	34,582	6,624	106,120	2,037,904	2,481	108,601	1947
1946	15,792	19,263	29,106	15,194	79,356	2,271,965	1,455	80,811	1946
1945	15,760	9,070	896	...	25,726	398,898	...	25,726	1945
1944	13,376	16,524	10,968	...	40,868	653,888	385	41,253	1944
1943	9,386	18,332	20,874	...	48,592	782,173	...	48,592	1943
1942	7,766	26,052	45,338	...	79,156	1,266,496	885	80,041	1942
1941	11,126	13,232	13,346	...	37,704	311,822	3,386	41,090	1941
1940	12,828	8,634	3,792	...	25,254	178,021	3,794	29,048	1940
1939	11,978	2,716	8,406	...	23,100	184,254	2,049	25,149	1939
1938	...	....	...	...	27,016	258,375	2,157	29,173	1938
1937	...	....	...	...	27,394	269,699	1,546	28,940	1937
1936	...	....	...	...	14,758	124,925	...	14,758	1936
1935	...	....	...	...	13,840	106,832	...	13,840	1935
1934	...	....	...	...	22,869	184,052	...	22,869	1934
1933	...	....	...	...	17,564	134,330	...	17,564	1933
1932	...	....	...	...	9,314	73,112	...	9,314	1932
1931	...	....	...	...	263	2,104	...	263	1931

*Includes small amount packed in California.



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Washington Crab Landings

YEAR	Puget Sound Pounds*	Grays Harbor Pounds**	Willapa Harbor Pounds**	Columbia River Pounds**	TOTAL POUNDS
1936	441,892	451,890	865,194	....	1,758,976
1937	500,104	643,234	1,441,352	3,428	2,588,118
1938	521,180	387,728	1,831,716	....	2,740,624
1939	441,122	620,004	2,153,496	....	3,214,622
1940	428,692	1,134,182	3,341,754	....	4,904,628
1941	514,184	1,293,222	3,968,152	206,984	5,982,542
1942	989,186	2,262,696	2,134,818	249,304	5,636,004
1943	1,267,024	2,732,090	1,052,550	56,660	5,108,324
1944	1,790,118	2,622,316	1,529,196	83,326	6,024,956
1945	1,993,398	1,961,978	1,439,204	4,838	5,399,418
1946	2,284,810	3,674,536	2,022,004	121,335	8,102,685
1947	1,512,808	6,599,380	3,822,288	38,184	11,972,660
1948	1,933,426	9,080,584	4,241,256	614,184	15,869,450
1949	1,355,148	7,633,157	3,204,240	950,006	13,142,551
1950	2,373,316	2,171,072	1,427,042	399,440	6,371,166
1951	1,547,502	1,321,400	1,806,096	154,970	4,829,968
1952	915,807	1,373,708	1,892,842	82,580	4,264,937
1953	1,190,186	2,700,206	3,035,435	78,263	7,004,090
1954	1,667,085	3,099,287	3,356,879	191,177	8,314,428
1955	1,212,743	3,269,131	2,457,479	209,871	7,149,224
1956	597,067	3,832,842	4,082,936	329,386	8,842,231
1957	331,061	7,174,757	3,196,881	386,931	11,089,630
1958	466,826	7,473,607	3,300,403	691,725	11,932,561
1959	558,802	4,563,120	2,271,632	292,819	7,686,373

*Conversion 22 lbs. per dozen. **Conversion 24 lbs. per dozen.

NOTE: 1959 Puget Sound figures are incomplete but include best available estimates to Dec. 31, 1959.

try during 1959.

San Juan Fishing & Packing Co. and Kadiak Fisheries Co. organized the jointly-held Alaska King Crab Co. to acquire and operate one of the Kodiak plants, where canned as well as frozen King crab is packed.

Pacific American Fisheries, Inc., another of the large salmon canning companies, which had been canning King crab at its King Cove plant for a couple of seasons, expanded its operations by installing a King crab division in its big salmon cannery at Alitak. Fortuitously, the plant was in operation when the heavy fishing in the vicinity of Alitak developed during the winter of 1959-60.

Wakefield's Deep Sea Trawlers, Inc., and Wakefield Fisheries expanded their operations broadly. Thus a charter was taken on the freezership *Reefer King*, which is being operated as a second station ship, opposite the Wakefield flagship *Deep Sea*.

Wakefield Fisheries further expanded its shore operations by leasing the crab cannery and cold storage of Whitney Co. at Seldovia, in the center of the productive Kachemak Bay King crab area. Thus in addition to its two freezership operations, the Wakefield company now operates shore plants for King crab freezing at Seldovia, its home station at Port Wakefield, and at Sand Point, where its activities are conducted in the plant of the Aleutian Cold Storage Co.

- Condition of the King crab resource is rated quite good by biologists, at least so far as the Bering Sea population is concerned. At the meeting of the International North Pacific Fisheries Commission in Seattle in the fall of 1959, the scientists reviewing the results of the international research on Bering Sea King crab reported evidence indicating the abundance and reproduction could be considered satisfactory. The suggestion was made however that, in the event trawling for King crab in the Bering Sea should be actively initiated, that study should be undertaken to assess its effect upon the stock.

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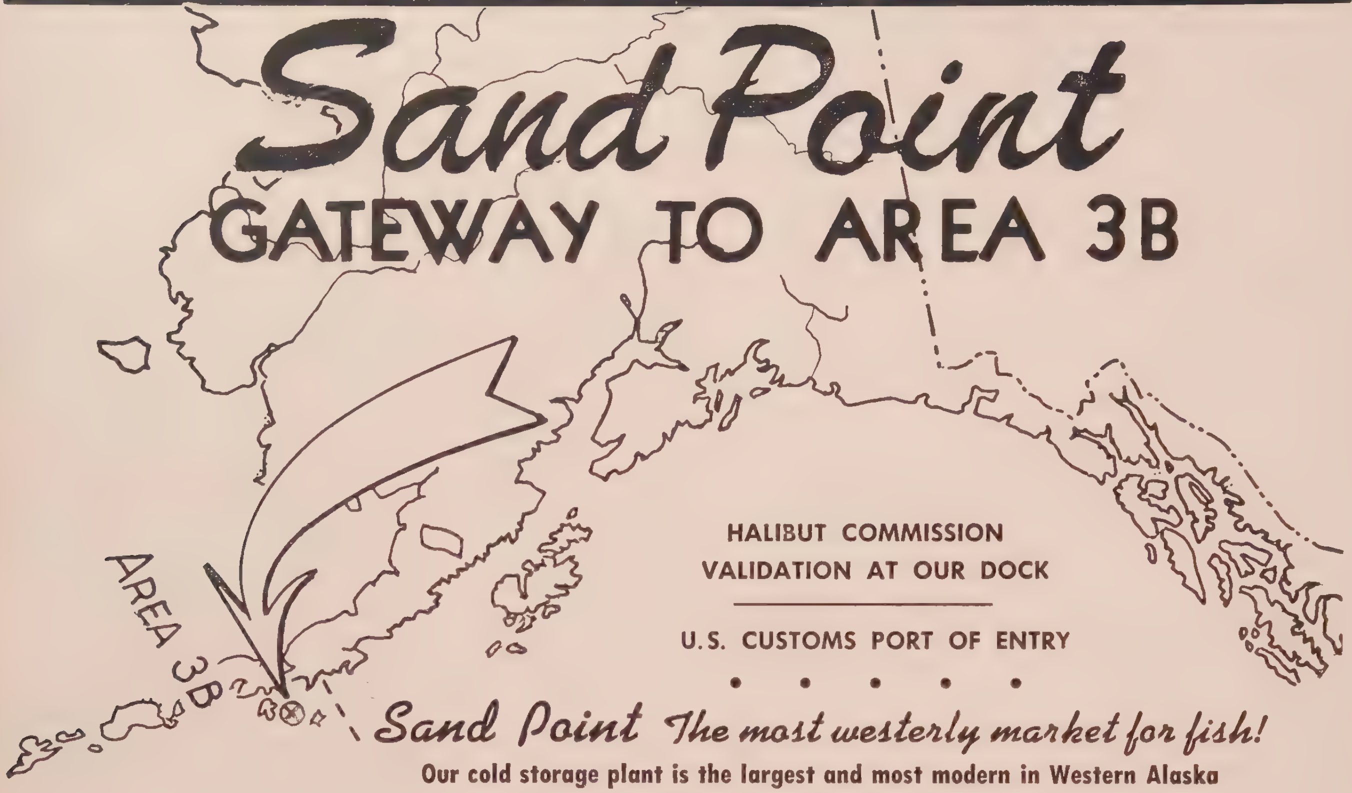

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HALIBUT

- Halibut catch of the American and Canadian fleets in the North Pacific in 1959 reached the highest level in history—71,488,000 lbs.

This from a fishery which 35 years ago was considered to be approaching commercial extinction.

Moreover, resource management has achieved the steady upward trend of production by rational application of scientific fact without at any time imposing hardship or material curtailment of activity upon the fleets of the two countries cooperating in this oldest of international conservation enterprises.

- The great catch of 1959 exceeded that of the preceding year by more than 6 mililon pounds, almost exactly the amount by which the catch in far-to-Westward Area 3-B in 1959 exceeded that of any previous year.

Only once in the history of the North Pacific halibut fishery—in 1954—was the 1959 catch of 71,488,000 lbs. been approached. In the earlier year the deliveries totalled 71,206,000 lbs.

- Rush-to-Westward in 1959 was stimulated by the early no-quota season there. This enabled ambitious fishermen equipped with adequately seaworthy vessels to start the season a month early, fishing the Area 3-B banks hard for two trips.

This was exactly what the International Pacific Halibut Commission's regulations were designed to encourage, and everyone was well satisfied with the 10,488,000-lb. catch taken in 1959 from the 3-B waters west of the Shumagin Islands.

Production in other areas held close to the pattern of the previous year. It is notable that this was accomplished in a much shorter main season. While it lasted 68 days in 1959 to

Pacific Halibut Catch by Areas and Nationalities

YEAR	AREA 1	AREA 2**			AREA 3**			TOTAL American	TOTAL Canadian	GRAND TOTAL	YEAR
	– Pounds –										
	American	American	Canadian	Total	American	Canadian	Total				
1932	902,271	16,026,631	5,960,640	21,987,271	21,146,037	451,761	21,597,798	38,074,939	6,412,401	44,487,340	1932
1933	722,254	14,880,259	7,649,400	22,529,659	22,887,941	637,672	23,525,013	38,490,454	8,286,472	46,776,926	1933
1934	1,541,258	13,360,103	9,004,714	22,364,817	22,829,989	726,658	23,556,648	37,731,350	9,731,372	47,462,722	1934
1935	*1,489,294	13,112,709	8,954,740	22,067,449	22,532,977	1,251,314	23,784,291	37,134,980	10,206,054	47,341,034	1935
1936	708,301	13,865,731	8,696,865	22,562,596	23,717,665	1,887,788	25,605,453	38,291,697	10,584,653	48,876,350	1936
1937	709,752	13,445,575	9,852,348	23,297,923	23,551,917	1,912,966	25,464,883	37,707,244	11,765,314	49,472,558	1937
1938	706,316	13,737,819	9,571,461	23,309,280	22,820,005	2,623,208	25,443,213	37,264,140	12,194,669	49,458,809	1938
1939	1,072,675	13,466,002	10,913,035	24,379,037	22,761,120	2,552,125	25,313,245	37,299,797	13,465,160	50,764,957	1939
1940	779,036	14,395,547	11,101,558	25,497,105	25,396,243	1,582,314	26,978,557	40,570,826	12,683,872	53,254,698	1940
1941	332,259	13,332,247	10,609,166	23,941,413	25,590,281	2,350,333	27,940,614	39,254,787	12,959,499	52,214,286	1941
1942	285,621	14,046,982	9,147,146	23,194,128	24,903,636	2,054,745	26,958,381	39,236,239	11,201,891	50,438,130	1942
1943	419,944	13,740,543	11,116,583	24,857,126	26,569,949	1,790,540	28,360,489	40,730,436	12,907,123	53,637,559	1943
1944	318,689	14,957,704	11,149,714	26,107,418	24,782,581	2,190,459	26,973,040	40,058,974	13,340,173	53,399,147	1944
1945	529,000	13,230,000	11,750,000	24,980,000	25,605,000	3,551,000	29,156,000	39,364,000	15,301,000	54,665,000	1945
1946	605,000	14,068,000	14,451,000	28,519,000	27,067,000	4,058,000	31,125,000	41,740,000	18,509,000	60,249,000	1946
1947	406,000	10,387,000	17,175,000	27,562,000	20,869,000	7,081,000	27,950,000	31,662,000	24,256,000	55,918,000	1947
1948	283,000	13,273,000	14,203,000	27,476,000	23,276,000	4,453,000	27,729,000	36,832,000	18,656,000	55,488,000	1948
1949	426,000	12,461,000	13,588,000	26,049,000	23,433,000	5,158,000	28,591,000	36,320,000	18,746,000	55,066,000	1949
1950	335,000	12,594,000	14,115,000	26,709,000	25,413,000	4,769,000	30,182,000	38,399,000	18,884,000	57,283,000	1950
1951	314,000	14,426,000	16,191,000	30,617,000	20,318,000	4,829,000	25,147,000	35,058,000	21,020,000	56,078,000	1951
1952	391,000	13,355,000	17,133,000	30,488,000	23,868,000	7,586,000	31,454,000	37,614,000	24,719,000	62,333,000	1952
1953	238,000	14,442,000	18,060,000	32,502,000	19,447,000	7,678,000	27,125,000	34,127,000	25,738,000	59,865,000	1953
1954	674,000	19,165,000	17,574,000	36,739,000	23,841,000	9,952,000	33,793,000	43,680,000	27,526,000	71,206,000	1954
1955	650,000	15,717,000	13,027,000	28,744,000	20,595,000	9,121,000	29,716,000	36,962,000	22,148,000	59,110,000	1955
1956	604,000	20,291,000	15,121,000	35,412,000	21,014,000	10,475,000	31,489,000	41,909,000	25,596,000	67,505,000	1956
1957	446,000	16,261,000	14,365,000	30,626,000	19,934,000	10,349,000	30,283,000	36,641,000	24,714,000	61,355,000	1957
1958	357,000	15,505,000	15,053,000	30,558,000	20,433,000	13,865,000	34,298,000	36,295,000	28,918,000	65,213,000	1958
1959	198,000	16,229,000	14,233,000	30,462,000	24,018,000	16,810,000	40,828,000	40,445,000	31,043,000	71,488,000	1959

NOTE: 1959 figures of the International Pacific Halibut Commission are preliminary and subject to further correction. In data for 1951 and thereafter Area 1 includes the catches from Areas 1A and 1B and Area 2 includes the catches from Areas 2A, 2B and 2C. In data for 1952 and thereafter Area 3 includes the catches from Areas 3A and 3B.

** Figures for Area 2 for 1937 and thereafter include halibut which were taken incidentally to cod fishing after the closure of Area 2, as allowed by regulations of the International Fisheries Commission for these years. Halibut so caught in 1957 was 706,000 lbs., and in 1958 was 437,000 lbs.

*This figure includes landings from Areas 1 and 4, as defined in the regulations for 1935. This amount should compare directly with the Area 1 catch of previous years, as it is not believed any fish were landed in 1935 from that portion of Area 4 which included Bering Sea.

1959- PACIFIC HALIBUT CATCH-AREAS 2 and 3 by Months

(Pounds)

MONTH	AREA 2*			AREA 3*			TOTAL		
	U. S.	Canada	Total ¶	U. S.	Canada	Total	U. S.	Canada	Total ¶
April	----	----	----	1,418,000	1,291,000	2,709,000	1,418,000	1,291,000	2,709,000
May	5,698,000	5,545,000	11,243,000	5,275,000	3,513,000	8,788,000	10,973,000	9,058,000	20,031,000
June	6,864,000	5,555,000	12,419,000	6,054,000	4,069,000	10,123,000	12,918,000	9,624,000	22,542,000
July	1,801,000	1,715,000	3,516,000	5,674,000	4,563,000	10,237,000	7,475,000	6,278,000	13,753,000
August	789,000	814,000	1,603,000	3,745,000	2,147,000	5,892,000	4,534,000	2,961,000	7,495,000
September	822,000	560,000	1,382,000	1,169,000	860,000	2,029,000	1,991,000	1,420,000	3,411,000
October	174,000	31,000	205,000	683,000	367,000	1,050,000	857,000	398,000	1,255,000
November	81,000	13,000	94,000	----	----	----	81,000	13,000	94,000
TOTALS	16,229,000	14,233,000	30,462,000	24,018,000	16,810,000	40,828,000	40,247,000	31,043,000	71,290,000

*Area 2 includes all grounds between Willapa Bay and Cape Spencer and Area 3 all grounds west of Cape Spencer including the present Areas 3A and 3B.

¶ These totals include 517,000 lbs. of halibut which were taken incidentally to setline fishing in Area 2, as allowed by the 1959 regulations of the International Pacific Halibut Commission.

This table does not include the partially estimated amount of 198,000 lbs. landed from Areas 1A and 1B.

NOTE:- 1959 figures of the International Pacific Halibut Commission are preliminary and subject to further correction.

59 the year before in Area 2, the Area 3 quota was reached, and topped, in 92 days, where in 1958 the season had run for 119 days.

● Division-of-catch trend of recent years was interrupted in 1959 when the Canadian fleet for the first time since 1954 failed to increase its percentage share of the international total. The down-turn in Canadian landings, to 43.5% in 1959 from 44.8% the year before, was not so great as to indicate any material reverse in the general trend toward eventual equal division in the catch.

● The fleet which opened the season in Area 3-B in April found good fishing in spite of poor weather, and numbered at least 42 vessels, vs. 23 the year before.

With the opening of Area 3-A a lot of the boats shifted there, and they found good fishing, but it fell off rapidly as the top of the crop was taken. Accordingly, a number of the big boat shifted back to 3-B, where they found good fortune on the Po-

PACIFIC HALIBUT CATCH SINCE 1914

Pounds

YEAR	AMERICAN VESSELS					CANADIAN VESSELS				GRAND TOTAL	YEAR
	Seattle *	Prince Rupert **	Alaska	Oregon & California ***	Total American	Pr. Rupert, Butedale, etc.	Vancouver New Westm., Vanc. I., Namu	American Ports	Total Canadian		
1914	41,825,575	1,877,000	5,175,993	...	48,878,568	8,742,100	4,991,500	...	13,733,600	62,612,168	1914
1915	33,133,313	11,323,500	5,561,577	...	50,018,390	8,444,715	4,791,000	...	13,235,715	63,254,105	1915
1916	20,259,446	13,810,895	6,961,628	...	41,031,969	6,710,500	5,258,000	...	11,968,500	53,000,469	1916
1917	22,884,434	14,216,030	6,792,138	...	43,892,602	5,839,030	3,686,000	...	9,525,030	53,417,632	1917
1918	16,455,564	10,790,500	6,076,500	...	33,322,564	4,338,000	1,552,000	...	5,890,000	39,212,564	1918
1919	16,968,639	13,000,700	7,366,991	...	37,336,330	6,120,000	1,957,000	...	8,077,000	45,413,330	1919
1920	19,692,915	14,676,400	8,035,000	...	42,404,315	7,190,000	2,010,600	...	9,200,600	51,604,915	1920
1921	17,127,783	19,531,400	8,784,029	...	45,443,212	8,906,000	4,149,400	...	13,055,400	58,498,612	1921
1922	14,602,780	17,248,900	4,772,038	...	36,623,718	8,510,000	3,559,500	...	12,069,500	48,693,218	1922
1923	12,017,312	20,366,600	8,283,590	...	40,667,502	9,392,900	3,707,200	...	13,100,100	53,767,602	1923
1924	11,889,080	20,913,200	12,663,776	...	45,466,056	8,181,500	4,043,500	...	12,225,000	57,691,056	1924
1925	11,197,474	22,434,800	9,752,465	400,000	43,784,739	6,181,600	3,207,600	...	9,389,200	53,169,939	1925
1926	10,156,630	20,483,800	14,011,005	600,000	45,252,435	6,869,200	4,156,500	...	11,025,700	56,278,135	1926
1927	11,917,150	18,664,400	15,386,766	400,000	46,818,316	6,941,000	1,523,400	...	8,464,400	55,282,716	1927
1928	13,788,775	20,389,700	9,623,700	760,000	44,562,175	8,349,500	1,541,500	...	9,891,000	54,453,175	1928
1929	12,359,170	20,599,200	12,882,426	1,103,888	46,890,984	8,045,100	1,747,800	...	9,792,900	56,683,884	1929
1930	12,671,479	16,997,800	11,389,756	930,000	41,989,832	7,006,600	1,475,200	...	8,481,800	50,471,632	1930
1931	15,087,672	10,573,300	9,638,150	953,000	36,252,122	6,202,400	1,424,800	...	7,627,200	43,879,322	1931
1932	22,000,296	10,633,800	4,568,829	1,050,000	38,253,025	4,227,700	2,023,200	. .	6,250,900	44,503,925	1932
1933	22,263,992	8,757,300	6,781,451	679,066	38,461,454	5,649,200	2,630,700	..	8,300,255	46,761,709	1933
1934	20,718,328	8,591,983	7,132,059	1,288,980	37,731,350	7,946,499	1,784,873	...	9,731,372	47,462,722	1934
1935	22,388,941	6,927,014	6,538,114	1,280,911	37,134,980	7,636,694	2,563,276	...	10,206,054	47,341,034	1935
1936	22,726,642	6,204,645	8,654,364	706,646	38,291,697	8,111,472	2,468,936	...	10,584,653	48,876,350	1936
1937	21,351,684	7,017,857	8,646,993	690,710	37,707,244	9,032,623	2,711,562	...	11,765,314	49,472,558	1937
1938	20,995,966	7,324,178	8,220,752	704,734	37,264,140	8,617,890	3,384,569	192,210	12,194,669	49,458,809	1938
1939	20,070,259	9,319,026	6,897,208	1,013,304	37,299,797	9,904,372	3,466,362	94,428	13,465,162	50,764,957	1939
1940	18,863,872	11,210,740	9,481,893	1,014,321	40,570,826	9,323,133	3,355,516	5,223	12,683,872	53,254,698	1940
1941	19,095,973	10,036,640	8,998,580	1,123,594	39,254,787	8,708,902	4,173,967	76,630	12,959,499	52,214,286	1941
1942	14,865,306	13,430,294	10,169,162	771,477	39,236,239	5,997,895	5,203,996	65,680	11,201,891	50,438,130	1942
1943	13,278,341	12,309,595	14,096,356	1,046,144	40,730,436	6,281,348	6,487,010	138,765	12,907,123	53,637,559	1943
1944	11,881,680	5,444,672	21,853,111	879,511	40,058,974	8,458,974	4,823,502	59,211	13,340,173	53,399,147	1944
1945	12,651,000	4,571,000	21,049,000	1,093,000	39,364,000	11,606,000	3,503,000	192,000	15,301,000	54,665,000	1945
1946	13,932,000	4,384,000	22,502,000	928,000	41,740,000	15,117,000	2,919,000	473,000	18,509,000	60,249,000	1946
1947	5,816,000	2,585,000	22,422,000	841,000	31,664,000	17,868,000	6,117,000	270,000	24,255,000	55,919,000	1947
1948	9,941,000	2,479,000	23,790,000	621,000	36,831,000	13,665,000	4,813,000	179,000	18,657,000	55,488,000	1948
1949	10,017,000	4,205,000	21,473,000	625,000	36,320,000	13,745,000	4,318,000	683,000	18,746,000	55,066,000	1949
1950	8,663,000	3,683,000	25,265,000	788,000	38,399,000	15,237,000	3,577,000	70,000	18,884,000	57,283,000	1950
1951	11,100,000	4,389,000	19,034,000	535,000	35,058,000	15,717,000	4,742,000	561,000	21,020,000	56,078,000	1951
1952	13,152,000	3,037,000	20,862,000	563,000	37,614,000	19,275,000	4,315,000	1,129,000	24,719,000	62,333,000	1952
1953	14,598,000	2,020,000	17,033,000	476,000	34,127,000	18,351,000	6,296,000	1,019,000	25,738,000	59,865,000	1953
1954	17,626,000	4,224,000	20,769,000	1,061,000	43,680,000	15,324,000	9,916,000	2,286,000	27,526,000	71,206,000	1954
1955	16,269,000	2,751,000	17,205,000	737,000	36,962,000	12,393,000	7,458,000	2,297,000	22,148,000	59,110,000	1955
1956	16,148,000	3,001,000	21,983,000	772,000	41,909,000	13,465,000	9,452,000	2,679,000	25,596,000	67,505,000	1956
1957	15,538,000	1,869,000	18,661,000	573,000	36,641,000	14,758,000	7,545,000	2,411,000	24,714,000	61,355,000	1957
1958	15,923,000	579,000	19,337,000	456,000	36,295,000	15,738,000	8,055,000	5,125,000	28,918,000	65,213,000	1958
1959	17,600,000	263,000	22,274,000	308,000	40,445,000	15,529,000	8,404,000	7,110,000	31,043,000	71,488,000	1959

NOTE:- 1959 figures of the International Pacific Halibut Commission are preliminary and subject to further correction.

* Includes the very small amount of fish landed at Neah Bay, Everett and elsewhere on Puget Sound.

** Includes the fish occasionally landed by American vessels at other Canadian ports.

*** Landings in Oregon and California not segregated prior to 1925.

1959 - Seattle Halibut Landings by Months and Varieties

MONTHS	Trips	HALIBUT NO. 1		HALIBUT NO. 2		LINGCOD		ROCKFISH		SABLEFISH		TOTAL	
		Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value
Dec. 1958	---	---	$ ---	---	$ ---	29,900	$3,200	300	$ --	---	$ ---	30,200	$ 3,200
Jan. 1959	---	---	---	---	---	---	--	---	--	---	---	----	---
February	---	---	---	---	---	...	--	---	--	---	---	----	---
March	---	---	---	---	---	- -	--	---	--	---	---	----	---
April	18	1,143,000	260,500	---	---	---	--	---	--	---	---	1,143,000	260,500
May	107	4,398,600	964,400	239,700	43,300	2,800	200	5,400	300	10,000	1,400	4,656,500	1,009,600
June	129	4,887,500	1,072,900	298,800	55,000	5,300	300	3,800	200	24,200	3,500	5,219,600	1,131,900
July	59	2,248,900	493,600	262,800	47,800	4,700	200	10,900	500	177,100	26,400	2,704,400	568,500
August	70	2,045,700	441,500	167,700	29,500	5,500	300	25,200	1,300	366,000	58,000	2,610,100	530,600
September	53	836,100	183,400	57,400	10,000	2,700	100	21,800	1,100	549,000	98,200	1,467,400	292,800
October	52	518,100	113,800	91,500	15,100	7,400	400	10,500	500	626,300	122,100	1,253,800	251,900
November	17	---	---	27,000	8,800	20,100	1,600	8,400	400	220,000	44,200	275,500	55,000
TOTAL	505	16,077,900	3,530,100	1,144,900	209,500	78,400	6,300	86,300	4,300	1,972,600	353,800	19,360,500	4,104,000
1958 Total	444	7,868,900	2,063,600	7,292,200	1,650,900	68,900	6,100	40,000	1,900	1,098,400	157,000	16,368,400	3,879,500
1957 Total	572	8,592,600	1,857,800	5,903,000	1,076,100	83,500	5,600	107,500	5,400	2,525,400	366,100	17,212,000	3,311,000
1956 Total	487	7,917,100	2,144,700	5,581,300	1,274,800	151,100	15,800	96,300	5,300	1,159,700	251,900	14,905,500	3,692,500
1955 Total	593	7,782,525	1,379,049	5,972,429	890,116	96,806	8,326	161,870	7,915	2,190,376	307,801	16,204,006	2,593,207
1954 Total	590	9,680,975	1,969,571	6,305,330	1,149,601	137,381	14,177	158,442	8,017	2,224,123	341,184	18,506,251	3,482,704
1953 Total	486	8,072,514	1,457,140	4,912,713	787,245	85,126	8,441	137,648	6,703	1,902,412	285,891	15,110,413	2,545,420
1952 Total	527	6,613,702	1,544,979	4,685,046	1,018,696	522,490	73,791	181,359	9,757	1,597,801	240,853	13,600,398	2,888,076
1951 Total	485	6,011,835	1,362,710	3,628,699	740,182	279,953	39,354	244,289	16,453	2,004,053	265,082	12,168,829	2,423,781
1950 Total	371	4,461,658	1,237,069	2,921,919	730,756	363,641	32,974	152,139	8,052	1,090,129	196,838	8,989,486	2,204,577
1949 Total	473	4,953,126	1,119,834	4,166,069	797,911	418,202	39,457	192,544	12,894	1,813,775	177,709	11,543,370	2,147,796
1948 Total	461	4,990,417	1,136,824	4,089,321	742,761	491,683	53,744	229,698	14,387	1,372,309	227,947	11,200,428	2,175,663
1947 Total	302	3,705,948	972,481	1,887,355	423,403	301,745	31,630	165,098	12,149	1,378,694	179,151	7,438,840	1,619,199
1946 Total	458	6,823,696	1,509,839	6,299,384	1,286,742	261,803	23,787	218,598	14,136	1,358,433	199,832	14,961,914	3,034,336
1945 Total	459	6,547,387	1,148,683	5,376,141	2,008,265	893,283	86,952	287,623	24,030	572,376	65,816	13,676,821	2,185,062

laris Spot and elsewhere along the Bering Edge.

- One significant aspect of the 1959 halibut landings was the scanty deliveries of American fish to Prince Rupert, and the heavy volume of Canadian fish sold in Seattle and other U. S. ports.

American vessels sold only 263,000 lbs. of halibut in the Northern B. C. port, and all-time low since the CNR built into Rupert in 1915, and in sharp contrast with the 20,000,000 lbs. of American halibut sold there in many years. The record for this trade was 22,434,000 lbs. sold in Rupert by the American fleet in 1925.

While the sales of American halibut in Prince Rupert were the smallest in history in 1959, those of Canadian halibut at American ports were the largest on record.

Canadian vessels' U.S. sales totalled 7,110,000 lbs. in 1959, almost as large as the combined sales at Vancouver, plus New Westminster, plus Namu, plus the Vancouver Island camps—8,404,000 lbs.

Basis for both of these unusual

Annual Catches of Halibut by Areas and Seasons

	*FIRST SEASON	SECOND SEASON	THIRD SEASON	INCIDENTAL PERMIT	TOTAL
AREA 1-A: SOUTH OF HECETA HEAD					
1954	411,000	...	...	7,000	418,000
1955	402,000	...	...	23,000	425,000
1956	430,000	...	...	...	430,000
1957	303,000	...	...	...	303,000
1958	168,000	...	...	...	168,000
1959	100,000	...	...	...	100,000
AREA 1-B: HECETA HEAD TO WILLAPA BAY					
1954	100,000	58,000	...	39,000	197,000
1955	122,000	...	...	90,000	212,000
1956	132,000	...	...	42,000	174,000
1957	72,000	16,000	...	55,000	143,000
1958	175,000	...	...	14,000	189,000
1959	75,000	...	...	23,000	98,000
AREA 2: WILLAPA BAY TO CAPE SPENCER					
1954	26,497,000	9,527,000	...	776,000	36,800,000
1955	22,203,000	5,302,000	...	1,156,000	28,661,000
1956	27,230,000	7,600,000	...	581,000	35,411,000
1957	25,658,000	4,262,000	...	706,000	30,626,000
1958	26,735,000	3,424,000	...	399,000	30,558,000
1959	27,376,000	2,569,000	...	517,000	30,462,000
AREA 3-A: CAPE SPENCER TO SHUMAGIN ISLAND					
1954**	29,420,000	3,340,000	...	8,000	32,768,000
1955	27,399,000	1,458,000	...	...	28,857,000
1956	29,314,000	1,486,000	...	...	30,800,000
1957	28,892,000	...	...	...	28,892,000
1958	29,730,000	...	...	...	29,730,000
1959	30,340,000	...	...	...	30,340,000
AREA 3-B: WEST OF SHUMAGIN ISLAND					
1954***	....	...	611,000	...	611,000
1955	....	...	933,000	...	933,000
1956	.292,000	134,000	264,000	...	690,000
1957	1,391,000	...	...	...	1,391,000
1958	4,568,000	...	...	...	4,568,000
1959	10,488,000	...	...	...	10,488,000

NOTE:- 1959 figures are preliminary and subject to further corrections. *Includes poundage caught in contravention of the regulations of all seasons of the year.
**Area extended west to Sanak Island in 1954. ***Sanak Island westward in 1954 Figures in pounds.

1959 - Halibut Fleet Landings at Seattle

MONTHS	TRIPS	HALIBUT, DRESSED											
		Chicken		Medium		Large		No. 2 Medium		No. 2 Large		TOTAL	
		Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value
April	18	18,700	$ 3,600	937,800	$ 210,900	186,500	$ 46,000	...	$ ...	...	$ ...	1,143,000	$ 260,500
May	107	242,500	43,500	2,754,000	599,300	1,402,100	321,600	184,400	32,600	55,300	10,700	4,638,300	1,007,700
June	129	550,000	96,500	3,002,600	669,500	1,334,900	306,900	241,200	44,100	57,600	10,900	5,186,300	1,127,900
July	59	138,400	22,200	1,275,100	279,600	835,400	191,800	203,000	36,000	59,800	11,300	2,511,700	540,900
August	70	80,800	13,000	1,241,200	266,000	723,700	162,500	133,600	23,200	34,100	6,300	2,213,400	471,000
September	53	50,100	8,300	488,400	108,000	297,600	67,100	46,100	7,900	11,300	2,100	893,500	193,400
October	52	1,500	300	290,300	63,800	226,300	49,700	74,400	12,000	17,100	3,100	609,600	128,900
November	17	...	...	27,000	8,800	...	...	...	...	...	...	27,000	8,800
Total	496	1,082,000	187,400	10,016,400	2,205,900	5,006,500	1,145,600	882,700	155,800	235,200	44,400	17,222,800	3,739,100

1959 - Halibut Arrivals at British Columbia Ports* - 1959

(Pounds)

MONTH	Prince Rupert Butedale¶	Vancouver Namu	District No. 3 and Victoria	Total Canadian	U. S. Vessels at Prince Rupert	GRAND TOTAL
April	....	480,000	...	480,000	...	480,000
May	4,616,000	2,268,000	1,053,000	7,937,000	135,000	8,072,000
June	5,889,000	2,195,000	705,000	8,789,000	57,000	8,846,000
July	3,725,000	921,000	110,000	4,756,000	66,000	4,822,000
August	867,000	282,000	36,000	1,185,000	...	1,185,000
September	311,000	313,000	6,000	630,000	1,000	631,000
October	116,000	22,000	5,000	143,000	4,000	147,000
November	5,000	3,000	5,000	13,000	...	13,000
1959 TOTAL	15,529,000	6,484,000	1,920,000	23,933,000	263,000	24,196,000
Previous Years						
1958	15,738,000	6,350,000	1,705,000	23,793,000	579,000	24,372,000
1957	14,758,000	6,205,000	1,340,000	22,303,000	1,869,000	24,172,000
1956	13,465,000	8,013,000	1,440,000	22,918,000	3,001,000	25,919,000
1955	12,393,000	5,628,000	1,830,000	19,851,000	2,751,000	22,602,000
1954	15,289,000	6,712,000	3,252,000	25,253,000	4,126,000	29,379,000
1953	17,894,000	4,979,000	1,774,000	24,647,000	1,989,000	26,636,000
1952	19,275,000	2,662,000	1,653,000	23,590,000	3,006,000	26,596,000
1951	15,717,000	2,819,000	1,923,000	20,459,000	4,381,000	24,840,000
1950	15,237,000	1,689,000	1,888,000	18,814,000	3,684,000	22,498,000
1949	13,745,000	2,129,000	2,189,000	18,063,000	4,205,000	22,268,000
1948	13,665,000	2,641,000	2,172,000	18,478,000	2,479,000	20,957,000
1947	17,868,000	4,298,000	1,819,000	23,985,000	2,585,000	26,570,000
1946	15,117,000	2,023,000	896,000	18,036,000	4,378,000	22,413,000
1945	11,606,000	2,340,000	1,163,000	15,109,000	4,571,000	19,680,000
1944	8,457,460	3,604,517	1,218,985	13,280,962	5,444,672	18,725,634
1943	6,381,348	5,155,435	1,331,575	12,907,123	12,337,126	25,018,553
1942	5,910,928	4,035,866	1,104,459	11,201,891	13,415,795	24,467,048
1941	8,625,079	3,139,021	1,014,192	12,959,499	10,033,720	28,812,612
1940	9,310,667	1,999,314	1,002,401	12,683,872	11,210,740	25,632,122
1939	9,904,289	3,018,504	445,500	13,465,162	9,319,026	22,687,319
1938	8,619,526	2,794,557	586,619	12,194,669	7,324,178	19,343,390
1937	9,026,372	2,333,370	377,796	11,765,314	7,015,057	18,773,489
1936	8,619,526	2,054,167	399,200	10,584,653	6,205,377	16,772,209
1935	7,636,704	2,246,196	349,300	10,206,054	6,927,581	17,159,781
1934	7,946,499	1,513,273	271,600	9,731,372	8,591,983	18,323,355

* Does not include landings by Canadian vessels in Oregon of 276,000 lbs. in 1958; in Alaska of 4,165,000 in 1959; 2,886,000 in 1958; 1,207,000 in 1957; and in Washington of 2 945.000 in 1959; 1,963,000 in 1958; 1,204,000 in 1957.

¶ Includes landings from minor British Columbia ports.

NOTE:- 1959 figures of the International Pacific Halibut Commission are preliminary and subject to further corrections.

PERCENTAGE DIVISIONS OF CATCH BETWEEN FLEETS

YEAR	CANADIAN			AMERICAN			YEAR
	Area 2	Area 3	All Areas	Area 2	Area 3	All Areas	
1959	46.7	41.2	43.5	53.3	58.8	56.5	1959
1958	49.6	40.6	44.8	50.4	59.4	55.2	1958
1957	46.3	34.7	40.3	53.7	65.3	59.7	1957
1956	42.6	33.5	38.1	57.4	66.5	61.9	1956
1955	45.5	30.8	37.6	54.5	69.2	62.4	1955
1954	47.6	29.9	38.9	52.4	70.1	61.1	1954
1953	55.8	28.0	42.9	44.2	72.0	57.1	1953
1952	56.1	24.2	39.6	43.9	75.8	60.4	1952
1951	53.9	19.6	38.0	46.1	80.4	62.0	1951
1950	52.7	15.6	32.8	47.3	84.4	67.2	1950
1949	51.4	17.9	33.7	48.6	82.1	66.3	1949
1948	51.7	18.0	33.6	48.3	82.0	66.4	1948
1947	62.3	25.3	43.7	37.7	74.6	56.3	1947
1946	50.7	13.0	30.7	49.3	87.0	69.3	1946
1945	47.0	12.2	28.0	53.0	87.8	72.0	1945
1944	42.7	8.2	25.0	57.3	91.8	75.0	1944
1943	44.5	5.8	24.1	55.5	94.2	75.9	1943
1942	39.0	7.7	22.2	61.0	92.3	77.8	1942
1941	44.2	8.4	24.7	55.8	91.6	75.3	1941
1940	43.5	5.9	23.8	56.5	94.1	76.2	1940
1939	44.8	10.0	26.5	55.2	90.0	73.5	1939
1938	41.3	10.4	24.7	58.7	89.6	75.3	1938
1937	42.6	7.5	23.8	57.4	92.5	76.2	1937
1936	38.8	7.0	21.7	61.2	93.0	78.3	1936
1935	40.8	5.3	21.3	59.2	94.7	78.7	1935
1934	40.2	3.0	20.5	59.8	97.0	79.5	1934
1933	33.9	2.7	17.7	66.1	97.3	82.3	1933
1932	27.1	2.0	14.4	72.9	98.0	85.6	1932

trends is economic, and is associated with (1) market price of halibut in Prince Rupert and Vancouver, as compared with that in Ketchikan and Seattle; and (2) the lay-over between trips voluntarily applied by the fleet.

The New International Aspect

● A new international aspect of the North Pacific halibut fishery assumed significant importance in 1959, when vessels of the Soviet Union appeared in large numbers in eastern Bering Sea, fishing with trawls on grounds where halibut are known to exist in some quantity. This was the first year of the Russian operations.

Furthermore, the Japanese trawling, freezing and reduction operations, begun in 1958, were doubled in 1959 with the appearance of a second factory ship served by a satellite fleet of large trawlers.

While these vessels were fishing primarily for minor groundfish, herring and scrapfish, it is almost certain that they must have taken significant quantities of halibut; although under the International North Pacific Fisheries Convention the Japanese at least are bound to abstain from fishing "halibut originating along the coast of North America." The problem of proof of origination of course provides a loophole.

That these Bering Sea operations did in fact result in the taking of substantial quantities of halibut is indicated to the American and Canadian industry by the fact that Japanese exporters offered around 2,000,000 lbs. of frozen halibut for sale in the United States, Canada and the United Kingdom.

OREGON AND CALIFORNIA HALIBUT LANDINGS

1959

MONTH	California Pounds	Oregon Pounds
May	10,000	86,000
June	10,000	95,000
July	10,000	28,000
August	10,000	10,000
September	10,000	16,000
October	10,000	8,000
November	5,000	---
TOTAL	65,000	243,000

NOTE:- 1959 figures of the International Pacific Halibut Commission are preliminary and subject to further correction, particularly California's which include chiefly estimation.

● Pursuing its researches in the Halibut Treaty waters to Westward, the international commission in 1959 conducted extensive tagging operations, 5,149 halibut being taken, measured, tagged and released in Bering Sea in the course of a cruise by the chartered Canadian vessel *Allaverdy*, owned by J. H. Todd & Sons and commanded by Capt. James Crookes.

A total of 341,000 lbs. of halibut were caught in five trips out of Sand Point in the Shumagin Islands. Most of the gear was run along the Bering Sea Edge to a point 200 miles west by north of St. George Island, and westward along The Chain to Makushin Bay.

Fish taken showed a marked decline in average size from previous years, the mean weight being 21 lbs., compared with 36 lbs. for the fish taken by the Polaris on these same grounds in 1956. There was also a marked drop in the percentage of "gray" halibut in the catch.

● Distribution of American halibut landings during 1959 showed some interesting and significant trends—largely as result of, or due to the same factors as, the strong switch of American deliveries away from Prince Rupert.

Seattle, with landings of 17,600,000 lbs. of American fish, not counting the very considerable deliveries of Canadian halibut, had the best business since 1954. If the Canadian deliveries at Seattle are included the 1959 landings would run far above those of 1954, and probably would top those of any year since 1936, when 22,726,000 lbs. were landed there.

Alaska, with the big boom in landings to Westward, and the trend to sell at Ketchikan rather than Rupert, had its biggest halibut year—26,439,000 lbs. All ports gained except Sitka, but the big growth was at Ketchikan, whose 9,548,000 lbs. was the best volume since 1946; and in the Central Alaska area, including the Shumagin Islands.

● Market prices for halibut moved off sharply on the Seattle market in 1959, the all-season, all-grades average price

1959 HALIBUT ARRIVALS AT ALASKA PORTS* 1959

(Data in Pounds)

MONTH	Ketchikan	Wrangell	Petersburg	Sitka	Juneau	Pelican	Misc. S. E. Alaska	Central+ Alaska	TOTAL Pounds
April	...	...	...	...	...	...	...	667,000	667,000
May	2,083,000	286,000	1,080,000	263,000	524,000	707,000	195,000	1,208,000	6,346,000
June	2,780,000	355,000	1,000,000	545,000	1,062,000	909,000	206,000	958,000	7,815,000
July	2,600,000	112,000	894,000	70,000	647,000	477,000	21,000	1,278,000	6,099,000
August	1,665,000	1,000	312,000	56,000	114,000	116,000	3,000	1,170,000	3,437,000
September	402,000	...	100,000	33,000	20,000	10,000	...	1,157,000	1,722,000
October	12,000	...	20,000	10,000	12,000	7,000	...	263,000	324,000
November	6,000	...	3,000	10,000	5,000	5,000	...	...	29,000
1959 TOTAL	9,548,000	754,000	3,409,000	987,000	2,384,000	2,231,000	425,000	6,701,000	26,439,000
1958	6,992,000	521,000	3,497,000	1,179,000	2,085,000	2,449,000	386,000	5,114,000	22,223,000
1957	5,741,000	660,000	3,703,000	1,359,000	2,364,000	1,879,000	327,000	3,835,000	19,868,000
1956	7,639,000	727,000	4,151,000	1,772,000	3,049,000	2,215,000	1,154,000	3,200,000	23,907,000
1955	3,811,000	298,000	3,393,000	1,040,000	2,679,000	2,621,000	397,000	5,026,000	19,265,000
1954	5,611,000	376,000	4,117,000	2,382,000	3,382,000	3,040,000	585,000	3,408,000	22,901,000
1953	4,823,000	368,000	2,847,000	1,662,000	1,706,000	2,829,000	214,000	3,625,000	18,074,000*
1952	7,696,000	430,000	3,022,000	2,023,000	2,645,000	2,244,000	139,000	2,661,000	20,860,000
1951	5,170,000	496,000	2,869,000	1,985,000	2,386,000	2,294,000	192,000	3,642,000	19,034,000
1950	6,992,000	479,000	3,140,000	3,103,000	3,823,000	3,351,000	75,000	4,372,000	25,265,000
1949	7,628,000	499,000	2,675,000	2,008,000	2,473,000	2,102,000	41,000	4,689,000	22,115,000
1948	7,700,000	716,000	2,548,000	2,990,000	2,797,000	2,362,000	114,000	4,742,000	23,969,000
1947	7,503,000	643,000	2,828,000	2,634,000	5,432,000**	...	...	3,389,000	22,429,000
1946	9,918,000	699,000	2,943,000	2,684,000	4,363,000**	...	...	2,279,000	22,886,000
1945	2,277,000	585,000	2,161,000	2,773,000	4,363,000**	...	...	2,221,000	20,887,000
1944	9,554,962	1,008,312	2,486,084	2,694,073	3,540,637	...	...	2,569,043	21,853,111
1943	7,450,730	727,157	1,936,825	1,691,697	2,289,947	...	...	...	14,096,356
1942	5,749,469	469,037	1,559,221	834,046	1,816,148	...	...	...	10,169,162
1941	3,367,567	375,135	1,463,801	2,173,697	1,616,928	...	...	...	8,998,580
1940	3,798,134	400,735	1,718 490	1,370,412	1,984,511	...	...	...	9,481,893
1939	2,263,927	279,660	1,46[illegible],190	931,557	2,001,999	...	...	...	6,897,208
1938	2,828,111	414,928	1,965,843	906,852	2,039,814	...	...	...	8,220,752
1937	3,642,996	590,834	1,352,807	893,602	1,832,533	...	...	...	8,646,993
1936	3,556,364	494,221	1,979,813	945,933	1,541,674	...	...	...	8,654,364
1935	3,752,488	112,060	474,672	667,811	1,341,864	...	...	...	6,538,114
1934	3,155,474	284,950	1,002,792	1,172,264	1,463,761	...	...	...	7,132,059

* Landings by Canadian vessels in Alaska included, which were 4,165,000 in 1959, 2,886,000 in 1958, and 1,207,000 in 1957.

+ Port Williams, Seldovia, Anchorage, Sand Point, Seward and Cordova.

** International Pacific Halibut Commission tagging.

NOTE:- 1959 figures of the International Pacific Halibut Commission are preliminary and subject to further correction.

SIZE OF HALIBUT FLEET

(INCLUDES REGULAR HALIBUT BOATS ONLY)

YEAR	UNITED STATES FLEET				CANADIAN FLEET				COMBINED FLEETS			
	Area 2	Area 2	Area 3	Area 3	Area 2	Area 2	Area 3	Area 3	Area 2	Area 2	Area 3	Area 3
	No. of Boats	No. of Men	No. of Boats	No. of Men	No. of Boats	No. of Men	No. of Boats	No of Men	No. of Boats	No. of Men	No. of Boats	No. of Men
1943	247	1,037	107	942	162	767	3	24	409	1,804	110	966
1944	278	1,056	84	753	278	831	4	34	485	1,887	88	767
1945	316	1,253	97	837	175	867	3	26	491	2,120	100	863
1946	373	1,373	116	921	187	952	5	41	560	2,325	121	962
1947	350	1,302	119	887	215	1,168	5	40	565	2,470	124	927
1948	403	1,496	139	1,095	249	1,221	5	39	652	2,717	144	1,134
1949	374	1,452	149	1,134	225	1,153	5	41	599	2,605	154	1,175
1950	426	1,654	150	1,147	235	1,210	5	39	661	2,864	155	1,186
1951	394	1,574	148	1,091	270	1,346	8	66	664	2,920	156	1,156
1952	295	1,243	134	885	233	1,211	8	64	528	2,454	142	949
1953	273	1,147	139	883	229	1,151	20	159	502	2,298	159	1,042
1954	289	1,238	121	720	224	1,149	20	167	513	2,387	141	887
1955	281	1,209	122	698	189	959	25	203	470	2,168	147	901
1956	285	1,213	99	548	155	829	17	134	440	2,042	116	682
1957	351	1,402	110	595	171	859	27	206	522	2,261	137	801
1958	276	1,135	121	645	140	712	37	291	416	1,847	158	936
1959	239	978	125	693	139	675	51	394	378	1,653	176	1,087

being 21.6¢ per lb., down 2.9¢ from the average of the year before.

Some decline had been expected, and at the National Fisheries Institute convention in New York in April prediction had been made that the Seattle price would average 5¢ down from 1958.

That it did not in the face of all-time record landings is evidence of consumer esteem for the product, or the reckless courage of the buyers.

North Pacific Halibut Seasons

YEAR	AREA 2			AREA 3			YEAR
	Opened	Closed	Fishing Days	Opened	Closed	Fishing Days	
1933	Feb. 1	Aug. 25	206	Feb. 1	Oct. 26	268	1933
1934	Mar. 1	Aug. 19	172	Mar. 1	Oct. 27	241	1934
1935*	Mar. 1	Sept. 6	159*	Mar. 1	Dec. 26	270*	1935
1936	Mar. 16	Aug. 10	148	Mar. 16	Nov. 3	233	1936
1937	Mar. 16	July 28	135	Mar. 16	Oct. 19	218	1937
1938	Apr. 1	July 29	120	Apr. 1	Oct. 29	212	1938
1939	Apr. 1	July 29	120	Apr. 1	Oct. 28	211	1939
1940	Apr. 1	July 13	104	Apr. 1	Sept. 26	179	1940
1941	Apr. 1	June 30	91	Apr. 1	Sept. 14	167	1941
1942	Apr. 16	June 29	75	Apr. 16	Sept. 25	163	1942
1943	Apr. 16	June 20	66	Apr. 16	Sept. 8	146	1943
1944**	Apr. 16	July 9	51**	Apr. 16	Nov. 30	194**	1944
1945	May 1	June 15	46	May 1	Sept. 24	147	1945
1946	May 1	June 11	42	May 1	Aug. 19	111	1946
1947	May 1	June 8	39***	May 1	Aug. 17	109***	1947
1948	May 1	June 1	32	May 1	July 11	72	1948
1949	May 1	June 3	34	May 1	July 12	73	1949
1950	May 1	June 1	32	May 1	July 5	66	1950
1951	May 1	May 28	28§	May 1	June 25	56	1951
1952	May 14	June 8	26§	May 14	July 12	58	1952
1953	May 17	June 9	24§	May 17	July 7	52	1953
1954	May 16	June 5	21§	May 16	July 12	58	1954
1955	May 12	June 4	24§	May 12	Aug. 4	84	1955
1956	May 20	June 26	38§	May 20	Aug. 23	97	1956
1957	May 1	June 17	48	May 1	Sept. 22	144	1957
1958	May 4	July 2	59	May 4	Aug. 31	119	1958
1959	May 1	July 8	68	May 1	Aug. 1	92	1959

NOTE:- All dates given are for the season. Fishing times given are actual periods of fishing, with allowance made in certain years for delays in fishing due to strikes and disputes. Closure generally at midnight of dates given.

§ Does not include special post-season open fishing periods in sub-areas.
* Fleet tied-up voluntarily until April 1.
** Fleet tied-up until May 20 in protest against OPA ceiling prices.
*** Seattle fleet largely tied-up until July 1, due to crew share dispute.

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MILD CURE

- Mild-cured salmon packed on the Pacific Coast in 1959 registered a moderate statistical decline from the pack of the previous year; but—

Kings increased sharply to the best pack since 1955; while—

Sharp reduction in Silvers accounted for the over-all reduction.

In short, there was no encouragement in 1959 to repeat the heavy pack of Silvers of 1958, one of the largest in history, which had not worked out profitably for most producers.

Moreover, in 1959 there was neither encouragement nor necessity to split Silvers, as the production of troll Kings, notably in Alaska and California, was deemed adequate for the trade's needs.

This was fortunate, for Puget Sound curing fell to 1,517 tierces, lowest pack recorded in the files of *Pacific Fisherman Yearbook* for many years back.

- Really big feature of the 1959 mild cure year was the California run, where production was heavy, more than three times as much as in 1958, although not comparable in size to the big run of 1955.

With this phenomenon occurring on a five-year cycle from the previous big year of these characteristic large, very fat fish, it can be expected that the industry will be watching the situation closely in another five years. There was some previous evidence of a possible five-year cycle, with the first year of the period displaying subdominance, and with the fifth plainly dominant.

Troll fishermen, on the other hand, were inclined to ascribe the California abundance to surface temperature conditions, even though Canadian oceanographers reported conditions off the British Columbia coast largely returned to normal late in the summer of 1959, after at least two years of above-normal surface temperatures.

In any case, the trollers fishing from Port Orford north to Cape Scott felt that the runs of fish which they normally find in this sector were taken much further south off the central coast of California.

1959 - MILD CURED SALMON

COMPANY	Tierces, 825 lbs. net		
	King	Silver	TOTAL
ALASKA:			
Alaska Coast Fisheries	160	----	160
Booth Fisheries Corporation	50	----	50
Bunzen & Davis	17	7	24
Halibut Producers Cooperative	731	----	731
McCallum-Legaz Fish Co.	112	----	112
McCallum Sales	13	----	13
New England Fish Co.	289	15	304
Northern Products Corporation	447	44	491
Pick-Shapiro Fisheries	114	----	114
San Juan Fishing & Packing Co.	165	----	165
Seaboard Fishing Co.	105	----	105
Sitka Cold Storage	39	----	39
Vita Food Products Co.	882	19	901
Washington Fish & Oyster Co.	9	----	9
Whitney & Company	225	----	225
Whiz-Eardley Fisheries	28	----	28
Yukon River	187	----	187
TOTAL ALASKA	3,573	85	3,658
BRITISH COLUMBIA:			
British Columbia Packers, Ltd.	192	----	192
Canadian Fishing Co.	40	----	40
Prince Rupert Fishermen's Co-op.	184	----	184
Sea Food Products, Ltd.	192	----	192
TOTAL BRITISH COLUMBIA	608	----	608

COMPANY	Tierces, 825 lbs. net		
	King	Silver	TOTAL
PUGET SOUND:			
Booth Fisheries Corporation	94	----	94
Everett Fish Co.	18	----	18
Halibut Producers Cooperative	3	----	3
McCallum-Legaz Fish Co.	110	----	110
New England Fish Co.	99	----	99
San Juan Fishing & Packing Co.	144	----	114
Seaport Fish Co.	477	----	477
Washington Fish & Oyster Co.	284	----	284
Whiz-Eardley Fisheries	288	----	288
TOTAL PUGET SOUND	1,517	----	1,517
OREGON:			
(None reported.)	---	----	---
CALIFORNIA:			
(Estimated)	2,547	----	2,547
TOTAL PACIFIC COAST	8,245	85	8,330

NOTE:- In addition to the above, 15 tierces of Falls were mild cured by the Everett Fish Co. These have not been included as it is believed they were for the curer's own specialty requirements and did not enter into the normal mild cured salmon trade.

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MILD CURE

- Alaska mild curing was quite good, the pack being the best since 1954; and British Columbia was about normal, although below 1958, due to the complete elimination of Silvers from the 1959 pack.

Puget Sound production actually was less than half the 1958 aggregate, and was the lowest since the mid-war year 1944.

Oregon reported no mild curing in 1959, something that has happened only once before—1954—in the history of this aspect of the salmon business; and mild curing had its beginnings on the Columbia River.

Market Condition Sound

- With a moderate pack, whose quality overall probably was somewhat above average, marketing of 1959 mild cure was orderly.

By early 1960 the feeling prevailed that there would be enough fish to go around until the new season opened, but certainly no glut.

Care Contributes to Quality

- California mild cure of 1959 was rated excellent in quality. Critical buyers conceded this readily, and were inclined to attribute this in part to the way the fish were handled, as well as to the fish themselves.

They saw marked contrast between the product of 1958 and of the following year.

First, the fish were fine as they came from the sea; good in size, fai in flesh, proper in color.

Second, in 1959 for the first time in the history of California salmon trolling the fish were all dressed and iced aboard the boats at sea. None were landed round, and to this fact the trade ascribes much of the responsibility for the "outstanding quality" with which they rated the pack. One buyer told *Pacific Fisherman*:

"California troll fish in 1959 basically were of good quality; and they were well handled. Where fish from that source may be highly variable from year to year, in 1959 they were excellent; and care, dressing and icing had much to do with it."

PACIFIC MILD CURED SALMON PACK

(IN TIERCES OF 825 LBS. NET WEIGHT)

YEAR	Alaska	British Columbia	Puget Sound	Columbia River	Oregon Coast	California Coast	Sacramento River	Kamchatka	Recapitulation		ANNUAL TOTALS	YEAR
									Kings	Silvers		
1900	. . .	. . .	. .	1,275	. . .	. . .	950	. . .		. . .	2,225	1900
1901	67	. . .	600	3,000	. . .	. . .	3,100	. . .		. . .	6,767	1901
1902	67	. . .	425	4,213	188	504	2,325	. . .		. . .	7,722	1902
1903	8	. . .	824	6,725	. . .	354	3,600	. . .		. . .	11,511	1903
1904	34	. . .	1,250	9,088	. . .	448	4,719	. . .		. . .	15,539	1904
1905	189	1,175	3,000	9,805	415	310	2,979	. . .		. . .	17,873	1905
1906	1,126	957	. . .	8,000	740	685	2,177	. . .		. . .	13,685	1906
1907	1,657	1,993	2,060	6,070	860	722	4,102	. . .		. . .	17,464	1907
1908	1,378	1,060	. . .	4,960	. . .	252	3,243	. . .		. . .	10,893	1908
1909	2,292	1,560	2,109	5,540	664	991	5,111	. . .		. . .	18,267	1909
1910	3,357	1,638	2,435	7,922	1,465	75	5,516	. . .		. . .	22,408	1910
1911	3,164	2,006	2,745	8,185	1,377	770	2,011	. . .		. . .	19,758	1911
1912	5,245	1,380	3,013	5,824	3,479	100	3,274	. . .		. . .	22,315	1912
1913	7,440	2,125	3,631	5,746	2,681	550	4,789	. . .		. . .	26,952	1913
1914	3,872	3,182	1,934	5,205	457	1,476	1,829	. . .		. . .	17,955	1914
1915	2,966	1,119	2,235	4,078	333	945	1,630	. . .		. . .	13,306	1915
1916	4,475	767	1,755	4,656	194	1,069	650	. . .		. . .	13,566	1916
1917	2,955	429	1,063	1,886	. .	300	1,508	. . .		. . .	8,181	1917
1918	4,234	729	1,093	1,804	275	721	1,913	. . .		. . .	9,869	1918
1919	6,803	1,173	2,423	3,328	148	2,381	2,355	. . .		. . .	18,611	1919
1920	2,770	1,116	2,036	2,275	102	1,793	1,345	. . .		. . .	11,437	1920
1921	3,966	1,076	4,517	3,051	160	1,251	812	. . .		. . .	14,833	1921
1922	5,158	2,253	4,727	1,621	162	550	1,195	. . .		. . .	15,666	1922
1923	4,075	1,819	5,799	1,769	176	1,229	606	. . .	15,129	344	15,473	1923
1924	6,069	2,969	6,409	2,320	286	2,624	1,291	. . .	21,476	492	21,968	1924
1925	7,119	3,098	5,600	2,746	547	2,241	1,523	500	22,530	844	23,374	1925
1926	5,781	2,183	4,087	1,055	1,205	929	1,767	650	16,585	1,072	17,657	1926
1927	8,982	2,689	5,160	951	918	927	1,125	854	19,390	2,216	21,606	1927
1928	5,784	2,676	4,304	1,305	2,163	1,686	179	783	14,051	4,046	18,880	1928
1929	5,477	3,016	4,311	1,969	1,787	1,160	155	1,083	15,749	3,209	18,958	1929
1930	5,331	2,630	4,361	1,068	102	1,184	124	2,144	16,049	895	16,944	1930
1931	4,123	1,083	5,700	1,251	372	1,027	164	712	13,862	570	14,432	1931
1932	5,560	1,542	3,650	2,012	1,119	752	294	640	13,443	2,126	15,569	1932
1933	4,852	3,097	3,527	2,431	660	1,392	37	340	15,295	1,041	16,336	1933
1934	4,908	4,657	3,882	1,855	270	1,572	5	776	16,960	965	17,925	1934
1935	5,487	2,665	3,563	1,730	210	2,090	439	670	15,450	1,404	16,854	1935
1936	5,222	1,642	4,897	1,138	68	1,939	366	840	15,611	495	16,106	1936
1937	6,373	4,055	2,775	604	. . .	1,026	49	778	15,552	108	15,660	1937
1938	7,786	3,128	3,657	1,292	387	627	945	787	16,451	2,158	18,609	1938
1939	7,724	2,802	2,937	501	20	417	119	600	14,905	224	15,129	1939
1940	5,210	693	3,531	33	. . .	711	308	11	10,283	714	10,497	1940
1941	8,862	1,474	3,561	229	. . .	360	15	. . .	14,174	302	14,501	1941
1942	6,748	1,055	2,494	20	. . .	. . .	. . .	. . .	10,241	76	10,317	1942
1943	3,869	811	1,022	21	. . .	166	. . .	. . .	5,278	611	5,889	1943
1944	3,518	2,019	959	16	. . .	1,259	1,329	. . .	7,969	*1,050	9,100	1944
1945	7,763	1,209	1,790	159	. . .	*1,065	1,570	. . .	10,843	*3,200	13,556	1945
1946	6,824	1,975	2,170	96	. . .	. . .	§2,764	. . .	13,216	613	13,829	1946
1947	5,919	1,675	2,129	99	. . .	§	919	. . .	10,631	110	10,741	1947
1948	5,076	1,025	2,282	77	. . .	. . .	. . .	. . .	8,490	36	8,456	1948
1949	4,449	1,177	2,049	86	. . .	891	. . .	. . .	8,625	27	8,652	1949
1950	4,809	889	3,264	90	. . .	1,214	. . .	. . .	10,109	157	10,266	1950
1951	4,671	897	2,436	20	. . .	1,200	. . .	. . .	9,150	74	9,224	1951
1952	3,489	752	2,318	4	. . .	493	. . .	. . .	7,052	.	7,052	1952
1953	4,484	742	2,688	30	. . .	1,033	. . .	. . .	9,209	75	8,977	1953
1954	4,003	645	2,155	. . .	. . .	1,010	. . .	. . .	7,500	313	7,813	1954
1955	3,375	678	2,796	189	. . .	4,200	. . .	. . .	11,238	**	11,238	1955
1956	2,002	688	2,267	131	. . .	2,075	. . .	. . .	7,416	***	7,163	1956
1957	2,385	533	2,374	97	. . .	456	. . .	Falls	5,845	***	5,845	1957
1958	3,749	760	3,240	209	. . .	845	. . .	169	6,866	1,768	8,803	1958
1959	3,658	608	1,517	. . .	. . .	2,547	. . .	. . .	8,245	85	8,330	1959

NOTE: - Mild cured Falls not included. *Estimated segregation. In 1945 the Silver category includes 200 tierces of Sockeyes. **Species segregation not available. *** Approximately 100 tierces of Silvers included with Kings. § Segregation as to district not available.

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FROZEN FISH

- Freezing of fish declined moderately on the Pacific Coast in 1959, off about 4.5 million pounds as result of the marked reduction in the salmon freeze.

The drop there approached 8 million pounds, and was only partially offset by the strong advance in halibut and minor gains in other categories.

Halibut, with almost 49 million pounds accounted for, was frozen in larger volume than in the two previous years, but the total was substantially short of the 1956 record of 53.5 million.

- Two factors reacted to produce the short pack of frozen salmon in 1959:

1959 - Pacific Frozen Food Fish

COMPANY	LOCATION	(Pounds)					
		Halibut	Salmon	Sablefish	Fillets	Misc.	Total
ALASKA							
Alaska Fish & Farm Products	Anchorage	19,020	75,500	---	---	---	94,520
Booth Fisheries Corporation	Alaska Points	1,200,000	202,000	---	---	19,000	1,421,000
Halibut Producers Cooperative	Alaska Points	829,800	1,483,736	95,996	---	---	2,409,532
Kayler-Dahl Fish Company	Petersburg	1,248,594	220,004	231,665	---	1,000	1,701,263
New England Fish Company	Alaska Points	4,100,000	340,000	---	---	---	4,440,000
McCallum-Legaz Fish Company	Sitka	10,000	50,000	---	---	---	60,000
Phillips, E.C. & Son, Inc.	Ketchikan	1,750,000	310,000	175,000	---	2,000	2,237,000
San Juan Fishing & Packing Co.	Alaska Points	3,389,613	409,133	11,486	172,643	---	3,982,875
Washington Fish & Oyster Co.	Port Williams	1,755,867	---	---	---	---	1,755,867
Whitney & Company	Alaska Points	1,329,079	570,338	---	---	---	1,899,417
Vita Food Products, Inc.	Alaska Points	65,758	903,543	341,202	---	---	1,310,503
Miscellaneous Alaska		4,312,269	1,733,746	435,651	1,046,357	99,000	7,627,023
Total ALASKA		20,010,000	6,298,000	1,291,000	1,219,000	121,000	28,939,000
BRITISH COLUMBIA							
Booth Fisheries Corporation	All Points	410,000	104,000	---	---	2,000	516,000
British Columbia Packers Ltd.	All Points	5,984,648	3,511,371	51,350	3,135,195	379,637	13,062,201
Canadian Fishing Company	All Points	4,856,549	3,452,061	84,976	640,574	124,695	9,158,855
Fishermen's Cooperative	Prince Rupert & Vancouver	4,346,219	1,992,849	44,732	502,490	5,440	6,891,730
San Juan Fishing & Packing Co.	All Points	601,340	254,188	---	516,979	---	1,372,507
Total BRITISH COLUMBIA		16,198,756	9,314,469	181,058	4,795,238	511,772	31,001,293
PUGET SOUND							
Booth Fisheries Corporation	Seattle	2,200,000	500,000	340,000	750,000	---	3,790,000
Everett Fish Co.	Seattle	71,000	122,000	226,000	---	---	419,000
McCallum-Legaz Fish Co.	Seattle	700,000	170,000	210,000	195,000	20,000	1,295,000
New England Fish Co.	Seattle	550,000	150,000	---	---	---	700,000
San Juan Fishing & Packing Co.	Seattle	2,716,218	501,067	665,880	290,110	60,000	4,233,275
Seaport Fish Co. (Rupert Fish Co.)	Seattle	992,927	218,149	83,224	118,733	315,123	1,728,156
Seattle Sea Foods Company	Seattle	1,600,000	---	---	---	---	1,600,000
Washington Fish & Oyster Co.	Seattle	1,122,130	770,050	217,500	281,800	195,872	2,587,352
Whiz-Eardley Fisheries Co.	Seattle	2,500,000	1,000,000	300,000	4,100,000	100,000	8,000,000
Total PUGET SOUND		12,452,275	3,431,266	2,042,604	5,735,643	690,995	24,352,783
OREGON							
New England Fish Co.	Oregon Points	---	10,000	---	141,000	---	151,000
Union Fishermen's Co-op Pkg. Co.	Astoria	---	20,859	---	---	40,333	61,192
Miscellaneous Oregon		140,000	28,141	1,000	259,000	754,667	1,182,808
Total OREGON		140,000	59,000	1,000	400,000	795,000	1,395,000
CALIFORNIA							
Lazio Fish Co., Tom	Eureka	---	26,003	48,491	75,828	---	150,322
Miscellaneous California		190,000	155,997	55,509	1,266,172	3,812,000	5,479,678
Total CALIFORNIA		190,000	182,000	104,000	1,342,000	3,812,000	5,630,000
TOTAL PACIFIC COAST		48,991,031	19,284,735	3,619,662	13,491,881	5,930,767	91,318,076

PACIFIC FROZEN FISH

DISTRICT & YEAR	Halibut Pounds	Salmon Pounds	Fillets Pounds	Sablefish Pounds	Miscellaneous Pounds	TOTAL	DISTRICT & YEAR
1949							1949
Alaska	20,914,221	12,222,337	1,309	3,772,851	271,901	37,182,619	Alaska
British Columbia	12,629,300	19,584,100	3,480,500	1,967,500	6,946,700	44,608,100	British Columbia
Puget Sound & Wash. Coast	7,535,497	5,123,763	1,192,440	1,846,314	1,088,490	16,786,504	Puget Sound & Wash. Coast
Columbia Riv. & Ore. Coast	324,527	458,280	2,567,863	289,205	121,994	3,761,869	Columbia Riv. & Ore. Coast
California	5,912	124,301	790,780	6,547	3,083,428	4,010,968	California
TOTAL, 1949	41,409,457	37,512,781	8,032,892	7,882,417	11,512,513	106,350,060	TOTAL, 1949
1950							1950
Alaska	25,625,940	8,467,426	5,113	566,965	98,409	34,763,853	Alaska
British Columbia	15,081,000	23,425,000	701,789	271,848	5,393,954	44,873,591	British Columbia
Puget Sound & Wash. Coast	6,270,705	4,706,925	1,166,019	1,547,807	5,226,430	18,917,886	Puget Sound & Wash. Coast
Columbia Riv. & Ore. Coast	417,651	483,068	3,383,682	63,081	333,117	4,679,599	Columbia Riv. & Ore. Coast
California	60,000	147,753	1,897,253	57,125	2,646,797	4,754,928	California
TOTAL, 1950	47,401,296	37,230,172	7,152,856	2,506,826	13,698,707	107,989,857	TOTAL, 1950
1951							1951
Alaska	19,577,948	8,780,110	6,888	3,241,556	820,473	32,427,075	Alaska
British Columbia	13,358,332	16,000,909	2,292,931	1,050,718	7,492,483	40,195,373	British Columbia
Puget Sound & Wash. Coast	7,789,536	4,314,516	2,119,910	1,791,000	2,275,577	18,290,539	Puget Sound & Wash. Coast
Columbia River & Ore. Coast	291,936	735,305	3,199,153	189,694	124,761	4,540,849	Columbia Riv. & Ore. Coast
California	14,690	172,706	253,169	8,445	2,503,039	2,952,049	California
TOTAL, 1951	41,032,442.	30,003,546	7,872,151	6,281,413	13,216,333	98,405,885	TOTAL, 1951
1952							1952
Alaska	17,341,747	5,327,279	8,977	988,520	205,955	23,872,478	Alaska
British Columbia	12,992,587	17,351,803	7,418,334	883,769	3,720,635	42,367,128	British Columbia
Puget Sound & Wash. Coast	8,345,650	5,532,676	3,004,786	1,661,919	751,310	19,296,341	Puget Sound & Wash. Coast
Columbia Riv. & Ore. Coast	219,223	1,157,484	3,827,761	166,072	136,084	5,506,624	Columbia Riv. & Ore. Coast
California	8,676	448,647	1,907,142	72,671	4,134,131	6,571,267	California
TOTAL, 1952	38,907,883	29,817,889	16,167,000	3,772,951	8,948,115	97,613,838	TOTAL, 1952
1953							1953
Alaska	19,727,501	6,399,247	46,675	2,599,418	730,465	29,503,306	Alaska
British Columbia	18,214,460	14,032,572	5,462,997	1,078,236	534,395	39,312,660	British Columbia
Puget Sound & Wash. Coast	9,473,444	6,380,891	1,654,189	1,651,734	462,602	19,622,950	Puget Sound & Wash. Coast
Columbia Riv. & Ore. Coast	389,483	630,630	2,382,420	204,842	676,081	4,283,456	Columbia Riv. & Ore. Coast
California	90,657	702,556	2,037,765	172,359	2,623,447	5,626,784	California
TOTAL, 1953	47,895,545	28,145,986	11,584,046	5,706,589	5,016,990	98,349,156	TOTAL, 1953
1954							1954
Alaska	20,987,363	9,341,468	57,468	3,072,158	203,706	33,662,163	Alaska
British Columbia	16,268,341	12,354,783	4,687,477	838,571	749,663	34,898,841	British Columbia
Puget Sound & Wash. Coast	12,201,900	4,740,637	2,651,084	1,498,376	460,545	21,552,542	Puget Sound & Wash. Coast
Columbia Riv. & Ore. Coast	864,352	788,963	1,672,109	154,456	210,124	3,690,004	Columbia Riv. & Ore. Coast
California	118,292	709,173	2,192,234	234,319	3,926,655	7,180,673	California
TOTAL, 1954	50,440,248	27,935,024	11,260,372	5,797,886	5,550,693	100,984,223	TOTAL, 1954
1955							1955
Alaska	16,597,154	4,459,926	328,613	2,389,290	102,615	23,877,598	Alaska
British Columbia	15,311,383	10,095,148	1,052,911	936,661	1,163,657	28,559,760	British Columbia
Puget Sound & Wash.Coast	11,058,245	4,034,495	2,913,312	1,638,426	714,435	20,358,913	Puget Sound & Wash. Coast
Columbia Riv. & Ore. Coast	276,224	554,345	1,121,886	118,000	123,275	2,193,730	Columbia Riv. & Ore. Coast
California	63,000	966,000	1,590,713	227,599	1,987,065	4,834,377	California
TOTAL, 1955	43,306,006	20,109,914	7,007,435	5,309,976	4,091,047	79,824,378	TOTAL, 1955
1956							1956
Alaska	21,718,748	8,603,212	3,818	1,919,865	77,455	32,323,098	Alaska
British Columbia	20,074,256	15,891,317	5,532,963	430,934	959,490	42,888,960	British Columbia
Puget Sound & Wash. Coast	11,058,245	6,746,753	3,235,661	2,002,242	1,256,057	24,465,292	Puget Sound & Wash. Coast
Columbia Riv. & Ore. Coast	450,762	1,790,544	1,290,170	230,583	288,374	4,023,433	Columbia Riv. & Ore. Coast
California	109,000	1,263,000	1,060,000	165,106	2,765,894	5,363,000	California
TOTAL, 1956	53,577,345	34,294,836	11,122,612	4,721,730	5,347,270	109,063,783	TOTAL, 1956
1957							1957
Alaska	13,710,555	6,890,597	266,483	2,803,496	19,744	23,690,875	Alaska
British Columbia	13,461,740	8,357,870	6,137,929	943,047	583,237	29,483,823	British Columbia
Puget Sound & Wash. Coast	10,372,000	3,713,634	2,736,000	1,979,000	1,085,000	19,885,634	Puget Sound & Wash. Coast
Columbia Riv. & Ore. Coast	871,000	793,000	2,023,000	302,180	313,000	4,302,180	Columbia Riv. & Ore. Coast
California	55,000	270,000	1,018,000	325,000	2,475,000	4,143,000	California
TOTAL, 1957	38,470,295	20,025,101	12,181,412	6,352,723	4,475,981	81,505,512	TOTAL, 1957
1958							1958
Alaska	18,259,707	5,879,030	3,600	1,341,179	150,000	25,633,516	Alaska
British Columbia	15,707,209	15,598,186	4,932,102	213,598	1,442,444	37,893,539	British Columbia
Puget Sound & Wash. Coast	12,990,000	4,830,086	2,342,597	1,137,445	1,036,496	22,345,624	Puget Sound & Wash. Coast
Columbia Riv. & Ore. Coast	527,000	558,115	2,432,000	70,000	725,985	4,313,100	Columbia Riv. & Ore. Coast
California	238,000	201,382	994,767	148,367	4,070,000	5,652,516	California
TOTAL, 1958	47,730,916	27,066,799	10,705,066	2,910,589	7,424,925	95,838,295	TOTAL, 1958
1959							1959
Alaska	20,010,000	6,298,000	1,219,000	1,291,000	121,000	28,939,000	Alaska
British Columbia	16,198,756	9,314,469	4,795,238	181,058	511,772	31,001,293	British Columbia
Puget Sound & Wash. Coast	12,452,275	3,431,266	5,735,643	2,042,604	690,995	24,352,783	Puget Sound & Wash. Coast
Columbia Riv. & Ore. Coast	140,000	59,000	400,000	1,000	795,000	1,395,000	Columbia Riv. & Ore. Coast
California	190,000	182,000	1,342,000	104,000	3,812,000	5,630,000	California
TOTAL, 1959	48,991,031	19,284,735	13,491,881	3,619,662	5,930,767	91,318,076	TOTAL, 1959

NOTE: - Since 1942 Steelheads have been combined with salmon. Figures given in this column cover the quantities of frozen fillets of all varieties of fish reported. British Columbia figures include only amounts directly reported by owners of the fish and do not include unreported quantities in custom freezers. Data cover food fish only and do not include fish frozen for bait or animal food, nor for subsequent canning. Halibut flitches are reported under fillets.

Washington Eulachon Smelt Catches

YEAR	Cowlitz River	Grays River	Lewis River	Columbia River	TOTAL
	(Pounds)				
1939	1,012,730	30,300	1,342,675	184,348	2,570,053
1940	730,170	60,450	1,341,250	384,650	2,516,520
1941	1,794,233	......	376,975	42,919	2,214,127
1942	1,570,915	51,750	....	54,325	1,676,990
1943	2,973,340	3,675	270,375	124,500	3,371,790
1944	1,125,674	10,900	504,000	249,522	**1,942,771
1945	2,048,438	42,753	1,552,770	215,040	*3,891,463
1946	2,674,040	300	....	51,099	2,725,439
1947	1,192,663	......	....	128,280	1,320,943
1948	2,197,810	......	547,590	296,240	3,041,640
1949	750	250	1,940,850	387,701	2,329,551
1950	31,320	11,600	557,157	379,730	***980,832
1951	....	......	1,050	649,838	651,268'
1952	377,754	......	....	400,747	796,309'
1953	799,788	15,555	....	206,909	1,025,052'
1954	792,902	......	360,871	308,742	1,478,680'
1955	1,344,674	......	....	408,833	1,753,507
1956	575,055	......	....	397,265	1,004,870
1957	987,804	2,165	....	209,924	1,199,893
1958	2,243,148	......	....	109,837	§2,387,372
1959	62,275	......	886,585	297,160	1,290,126

*Includes 32,462 lbs. caught in Kalama River. **Includes 44,300 lbs. from Kalama River, 7,675 lbs. from Naselle River, and 700 lbs. from Nemah River. ***Includes 1,025 lbs. taken in Kalama River. 'Total includes minor catches from the Kalama River: 16,165 lbs. in 1954; 32,550 lbs. in 1956; 44,106 lbs. in 1959. § Total includes 35,651 lbs. from the Quinault River and 736 lbs. from the Queets River in 1958.

FROZEN

(1) unprecedented weakness of the troll salmon fishing off Washington, Oregon and southern British Columbia; and (2) the acute shortage of Falls in British Columbia and Washington waters.

The pack of frozen salmon, with only 19+ million pounds accounted for on the entire Pacific Coast was the lowest of which the *Pacific Fisherman Yearbook* has record.

Nor could this small pack be accounted for in any way by market or economic conditions. There was an excellent demand for frozen salmon, but even high prices could not produce sufficient supplies for its satisfaction.

OREGON OTTER TRAWL LANDINGS

YEAR	SOLE				Flounders	"Turbot"	"Cod" Miscel.	Lingcod	Rockfish	Ocean Perch	Total
	Petrale	English	Dover	Other							
1942	3,745,236	227,783	2,308,308	1,671,162	443,840	71,137	47,255	989,142	1,728,299	1,086,242	12,318,404
1943	3,805,094	898,639	6,431,666	2,239,125	858,051	2,831,013	32,731	934,878	6,762,494	1,601,368	26,395,059
1944	2,019; 148	1,057,701	1,593,469	254,400	877,048	700,147	594,810	1,208,051	11,266,874	398,836	19,970,484
1945	1,574,143	1,096,601	2,704,216	238,507	1,024,288	168,811	412,731	1,015,215	17,365,866	40,554	25,640,932
1946	2,984,092	3,950,609	3,197,988	132,136	1,279,839	297,708	260,574	1,150,803	10,671,012	31,310	23,956,071
1947	1,443,936	1,883,438	2,031,905	139,791	667,347	723,497	30,194	569,226	4,637,594	92,344	11,688,763
1948	2,605,460	3,266,422	2,802,181	272,878	1,428,660	1,219,208	29,083	798,952	3,890,003	338,739	16,651,586
1949	1,514,762	1,092,493	3,003,574	299,785	272,042	1,723,963	4,821	728,464	3,307,595	591.842	12,539,341
1950	3,151,833	2,399,103	6,306,144	392,775	355,125	...	349,660	649,719	4,018,991	Dogfish	17,623,350
1951	2,052,366	2,420,333	8,227,444	859,820	351,001	...	672,656	887,187	1,659,212	3,524,208	20,654,227
1952	1,545,540	1,949,294	7,289,059	1,308,778	242,535	...	388,111	511,269	3,722,048	4,431,991	21,388,625
1953	1,028,578	1,784,309	3,146,709	1,989,828	317,293	844,921	419,852	315,347	3,012,714	3,281,196	16,140,747
1954	959,674	1,417,588	2,580,257	2,096,807	561,723	1,112,708	1,190,474	276,952	2,608,517	2,882,847	15,687,547
1955	1,584,946	1,392,162	3,549,087	2,946,087	827,285	1,822,344	2,603,029	419,611	3,183,917	2,847,851	21,176,319
1956	1,204,203	884,026	2,557,140	2,254,749	261,566	609,842	10,013,316	251,033	2,456,212	3,199,251	23,691,338
1957	2,173,978	1,692,966	3,691,189	595,117	460,453	...	11,866,762	595,796	3,566,518	3,324,465	27,967,244
1958	910,938	1,728,943	3,358,904	656,563	546,832	...	13,224,398	318,215	3,449,837	2,472,821	26,667,451
1959	1,224,576	1,376,991	4,298,805	766,844	285,577	...	11,125,593	391,326	3,283,692	1,822,407	24,575,811

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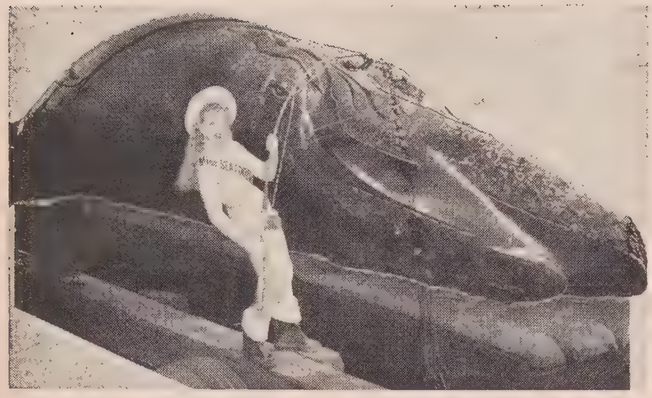

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1959-IMPORTS OF FRESH AND FROZEN TUNA TO U.S.

(POUNDS)

Fresh - Frozen	Oct. '58	Nov. '58	Dec. '58	Jan. '59	Feb.	March	April	May	June	July	August	Sept.	TOTAL
JAPAN - Total	13,352,000	11,677,000	14,030,000	13,846,000	14,554,000	14,644,000	17,925,000	12,865,000	8,597,000	12,383,000	13,820,000	7,716,000	155,409,000
Albacore	2,222,000	2,600,000	4,351,000	2,633,000	6,221,000	4,970,000	5,747,000	2,006,000	732,000	677,000	3,557,000	3,207,000	38,923,000
Other Tuna	11,130,000	9,077,000	9,679,000	11,213,000	8,333,000	9,674,000	12,178,000	10,859,000	7,865,000	11,706,000	10,263,000	4,509,000	116,486,000
PERU - Total	3,606,000	4,181,000	4,555,000	3,524,000	4,605,000	4,285,000	3,487,000	2,005,000	5,465,000	3,129,000	2,518,000	10,050,000	51,410,000
Lightmeat Tuna	3,606,000	4,181,000	4,555,000	3,524,000	4,605,000	4,285,000	3,487,000	2,005,000	5,465,000	3,129,000	2,518,000	10,050,000	51,410,000
ECUADOR-Total	254,000	----	----	142,000	300,000	----	----	240,000	---	1,462,000	1,246,000	2,291,000	5,935,000
Lightmeat Tuna	254,000	----	----	142,000	300,000	----	----	240,000	---	1,462,000	1,246,000	2,291,000	5,935,000
OTHERS - Total	521,000	1,615,000	347,000	2,008,000	2,342,000	2,080,000	1,329,000	1,609,000	2,452,000	2,873,000	1,269,000	1,488,000	19,933,000
Albacore	1,000	966,000	----	41,000	32,000	166,000	----	870,000	869,000	566,000	----	54,000	3,565,000
Lightmeat Tuna	520,000	649,000	347,000	1,967,000	2,310,000	1,914,000	1,329,000	739,000	1,583,000	2,307,000	1,269,000	1,434,000	16,368,000

● Halibut, on the other hand, was strong, with the third largest pack in history, the 48.99 million pounds accounted for having been exceeded only in 1954 and 1956.

Production was high and, though the season ran long, the into-freezer movement was strong and well sustained.

Moreover, there was an unusual proportion of the overall pack produced far to Westward as result of favorable season provisions in the international regulations. Thus the Sand Point operations of the Aleutian Cold Storage Co. supported the fleet during the special season in advance of the regular opening.

● Fillet freezing reached almost 13.5 million pounds, topped only in 1952. Strength in this category traces probably to the fact that halibut flitches to some degree may have been reported under this heading; while *Pacific Fisherman Yearbook* classifies fish frozen in slabs and blocks under the "Fillets" heading.

The strong trend to flitches continues in the halibut marketing business, with an increasing proportion of the large sizes marketed in that style. In addition, much of the halibut also is "portionized" for the restaurant and institutional trade.

● Foreign trade considerations were perhaps of more concern to Pacific fish freezers in 1959 than they have been for a number of years.

In the late summer the United Kingdom freed frozen salmon from exchange controls, but this proved of only academic interest to the freezers in the United States and Canada, as they had less than enough for their domestic orders.

The eased conditions surrounding trading with the U.K. however are believed to have offered material encouragement to shipments of Japanese Silvers specially frozen for British requirements.

● *Portionizing* of frozen fish took a new turn in early 1960 with the introduction in the restaurant and high-class institutional trade of individually frozen fillets of Petrale sole.

These fillets, carefully selected for workmanship as well as basic quality and condition, are frozen, skinned side down, in a shelf freezer. They are then sorted for size to an ounce or half-ounce tolerance; and thoroughly glazed by a spray which leaves them well protected.

The frozen fillets are then layer packed in tight master cartons and stored or distributed. The customer gets a fillet of sole that looks like a fish; the chef knows his cost to a fraction of a cent; and he has immediately available, frozen and protected, raw material whose thawing is part of the preparation.

U.S. Production of Fish Sticks, by Areas

Area	October-December				January-March				April-June				July-September				12 Mths. Total * lbs.	
	1958		1957		1959		1958		1959		1958		1959		1958			
	Firms	* lbs.	Firms	* lbs.	Firms	* lbs.	Firms	* lbs.	Firms	* lbs.	Firms	* lbs.	Firms	* lbs.	Firms	* lbs.	1959	1958
Atlantic Coast States	21	13,633	23	11,626	24	15,203	24	14,074	22	11,797	22	11,452	24	10,812	21	11,329	51,445	48,481
Interior & Gulf States	4	1,614	4	1,399	5	1,712	4	1,433	5	994	3	1,173	6	1,216	4	1,704	5,536	5,709
Pacific Coast States	11	1,192	11	1,248	10	1,417	12	1,415	9	890	11	1,161	9	940	11	1,227	4,439	5,051
TOTAL	36	16,439	38	14,273	39	18,332	40	16,922	36	13,681	36	13,786	39	12,968	36	14,260	61,420	59,241

* Thousand.

Alaska Custom Cold Storage Freezings - 1959

COMPANY	LOCATION	(Pounds)					
		Halibut	Salmon	Sablefish	Fillet	Misc.	GRAND TOTAL
Alaska Fish & Farm Products	Anchorage	19,020	75,500	---	---	---	94,520
Aleutian Cold Storage Company	Sand Point	4,545,000	---	---	---	---	4,545,000
Juneau Cold Storage Company	Juneau	2,337,746	1,201,124	270,502	---	---	3,809,372
Ketchikan Cold Storage Company	Ketchikan	4,489,000	729,300	---	472,000	---	5,690,300
Pelican Cold Storage Company	Pelican	2,229,611	1,827,296	147,303	---	---	4,204,210
Petersburg Cold Storage Company	Petersburg	1,784,774	777,509	375,970	194,627	8,018	3,140,898
Sitka Cold Storage Company	Sitka	947,665	500,245	106,518	---	---	1,554,428
TOTAL		16,352,816	5,110,974	900,293	666,627	8,018	23,038,728

OREGON TROLL SALMON LANDINGS

(Pounds)

Year	Columbia River		Coastal Ports		State Total		Oregon Total Both	Year
	Chinook	Silver	Chinook	Silver	Chinook	Silver		
1942	323,769	100,843	320,766	926,936	644,535	1,027,779	1,672,314	1942
1943	157,814	125,618	247,349	534,813	405,163	660,431	1,065,594	1943
1944	457,721	286,637	815,254	1,184,605	1,272,975	1,471,242	2,744,217	1944
1945	1,012,524	231,774	979,105	950,614	1,991,629	1,183,388	3,174,017	1945
1946	1,063,943	478,100	1,522,452	935,182	2,586,395	1,413,381	3,999,776	1946
1947	626,276	598,735	1,948,432	1,278,140	2,574,708	1,876,875	4,451,583	1947
1948	532,788	409,015	984,613	932,557	1,517,401	1,341,572	2,858,973	1948
1949	223,938	163,380	1,136,868	1,126,669	1,360,806	1,290,049	2,650,855	1949
1950	291,386	365,540	731,395	883,407	1,022,781	1,248,947	2,271,728	1950
1951	464,973	589,697	2,135,752	1,688,096	2,600,725	2,277,793	4,878,518	1951
1952	821,404	532,224	2,262,898	2,242,232	3,084,300	2,774,456	5,858,758	1952
1953	518,228	368,730	1,404,483	1,937,542	1,922,711	2,306,272	4,228,983	1953
1954	520,396	243,107	3,277,655	999,696	3,798,051	1,242,303	5,040,854	1954
1955	522,821	344,542	3,058,350	1,854,341	3,581,171	2,198,883	5,780,054	1955
1956	476,058	477,069	4,089,685	2,894,208	4,565,743	3,371,277	7,937,020	1956
1957*	178,094	371,307	2,838,350	3,482,115	3,016,444	3,853,422	6,869,866	*1957
1958	92,772	202,964	1,730,940	1,140,884	1,823,712	1,343,848	3,167,560	1958
1959**	72,949	222,214	436,906	729,916	509,855	952,130	1,461,985	**1959

*Columbia River also received 21,556 Pink Salmon. **Total for first 9 months only.

The innovation is reported taking hold with vigor which promises well.

- Japanese frozen halibut, which had been introduced in a very small way in the fall of 1958, created something of a stir late in 1959 by its increasing volume. Trade sources report that the Japanese offerings in the United Kingdom, United States and Canada would approximate 2 million pounds.

Source of this fish was not explained, but in Canada and the United States it is presumed to have come from Japanese trawling operations in Bering Sea.

- Product development was featured in 1959 by the introduction of frozen, ready-to-heat prepared seafood dished by San Juan Fishing & Packing Co. These products, offered in boil-in-the-

WASHINGTON TRAWL LANDINGS

Year	Sole and Flounders	"Cod"	Lingcod	Sablefish	Rockfish	Miscellaneous	TOTAL	Year
1930	339,932	26,318	---	---	24	32,419	398,693	1930
1931	323,064	30,269	---	---	----	3,674	357,007	1931
1932	281,302	46,512	---	---	1,000	1,374	330,188	1932
1933	296,517	59,965	---	---	----	5,200	361,682	1933
1934	247,684	25,405	13,454	---	8,313	6,116	300,972	1934
1935	2,575,998	185,786	285,759	---	63,284	23,743	3,134,570	1935
1936	4,791,994	406,361	237,229	---	81,301	22,650	5,539,535	1936
1937	4,265,491	441,130	235,431	---	72,640	14,919	5,029,611	1937
1938	5,036,852	456,814	286,439	---	107,163	21,952	5,909,220	1938
1939	4,659,122	354,805	197,982	---	112,395	231,614	5,555,918	1939
1940	5,917,096	518,705	247,007	---	248,711	946,788	7,878,307	1940
1941	7,977,576	457,253	199,128	---	93,286	582,295	9,309,538	1941
1942	9,575,018	1,172,811	3,845,055	118,406	1,034,417	717,279	16,462,986	1942
1943	13,350,936	996,963	4,859,693	778,451	4,464,702	1,015,394	25,366,139	1943
1944	7,806,664	623,151	4,254,298	1,429,682	5,132,233	270,898	19,516,926	1944
1945	9,185,003	2,417,053	4,177,839	529,507	16,093,712	211,068	32,614,182	1945
1946	9,709,656	3,701,647	3,193,436	628,756	10,094,207	93,705	27,421,407	1946
1947	9,294,256	2,442,583	2,481,497	155,981	6,024,582	99,887	20,498,786	1947
1948	13,744,310	5,371,084	4,649,453	314,229	10,262,442	162,166	34,503,684	1948
1949	10,368,493	5,465,538	3,063,672	586,368	12,610,526	588,282	32,682,879	1949
1950	10,379,364	6,330,873	2,365,948	497,822	12,210,430	414,731	32,199,168	1950
1951	11,016,660	8,395,728	1,844,559	1,277,731	9,939,526	2,057,590	34,531,794	1951
1952	12,865,755	9,976,893	1,510,339	643,485	11,288,025*	3,375,374	39,659,871	1952
1953	7,890,623	8,183,080	949,757	225,228	6,979,133*	4,468,543	28,696,364	1953
1954	12,314,392	15,392,911	1,517,995	335,995	12,857,626*	1,593,525	44,011,733	1954
1955	13,890,754	12,608,123	3,428,200	316,950	9,082,237*	3,512,835	42,839,099	1955
1956	14,186,788	9,560,914	2,845,989	3,268,911	10,689,677*	1,756,587	42,308,866	1956
1957	13,459,636	11,280,451	2,566,023	563,968	8,787,706*	5,482,072	42,139,856	1957
1958	10,684,243	12,243,074	2,876,935	370,321	8,134,745*	8,516,854	42,826,172	1958
1959	12,632,744	13,073,255	4,653,451	801,653	12,318,039*	5,750,228	49,229,370	1959

*Includes Pacific Ocean Perch: 1952 - 1,694,355; 1953 - 3,101,562; 1954 - 6,250,000; 1955 - 3,498,758; 1956 - 4,994,875; 1957 - 4,515,704; 1958 - 2,736,207; 1959 - 5,928,610.

NOTE: 1959 figures include estimates through the balance of the year made by the Washington Department of Fisheries.

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U.S. Production of Fish Sticks

(Thousands of Pounds)

Month	1959 Cooked	1959 Uncooked	1959 Total	1958	1957	1956	1955	1954	1953
January	5,746	570	6,316	5,471	4,204	4,883	5,345	2,771	115
February	5,807	587	6,394	5,925	5,189	5,344	5,794	3,180	133
March	5,172	450	5,622	5,526	5,090	6,103	7,205	4,003	148
April	4,342	366	4,708	4,855	4,435	3,792	5,953	3,841	35
May	4,084	314	4,398	4,229	3,322	3,894	4,879	3,941	22
June	4,284	291	4,575	4,702	3,464	3,601	5,392	4,381	31
July	3,477	292	3,769	4,574	3,763	3,174	4,340	3,810	417
August	3,560	295	3,855	4,358	4,585	4,187	4,520	4,364	454
September	4,752	592	5,344	5,328	4,803	4,107	4,535	4,272	809
October	*	*	*	5,485	5,104	5,085	5,261	5,637	1,435
November	*	*	*	5,091	4,520	4,607	4,946	4,803	1,902
December	*	*	*	5,359	3,955	4,041	4,876	4,959	2,001
TOTALS	41,224	3,757	44,981	60,903	52,434	52,818	63,046	49,962	7,502

*Not available.

bag multi-ply extruded flexible, transparent packaged, pioneered Pacific application of these modern packaging materials to this field. The project was reported upon first and fully in *Pacific Fisherman* for August, 1959, Vol. 57, No. 9.

The San Juan company also became the first in the United States to apply the newly instituted U.S. Grade A quality standards and inspection to its halibut steaks.

- Regionally, 1959 fish freezing was better in Alaska than elsewhere, long gains being made there in the quantity of both halibut and salmon frozen. Trolling there was able to make up in a small way for the shortages registered in salmon in British Columbia and Puget Sound. The amount of

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1959 Pacific Frozen Shellfish

COMPANY	LOCATION	Dungeness Crabmeat lbs.	King Crabmeat lbs.	Crab in Shell lbs.	Shrimp Meat lbs.	Clams Shucked lbs.	Oysters Shucked lbs.	TOTAL lbs.
Alaska King Crab Co.	Kodiak, Alaska	---	139,500	28,320	---	---	---	167,820
Booth Fisheries Co.	Seattle, Washington	---	---	---	---	---	300,000	300,000
British Columbia Packers Ltd.	All Stations	914	---	---	25,892	500	52,141	79,447
Canadian Fishing Co.	All Stations	2,044	---	1,894	8,117*	---	7,411	19,466
Coast Oyster Co.	South Bend & Eureka	---	---	---	---	---	1,335,264	1,335,264
Coastal Glacier Seafood Co.	Hoonah, Alaska	66,336	---	8,278	---	---	---	74,614
Columbia River Packers Assn.	Newport, Oregon	77,834	---	---	---	---	---	77,834
Fishermen's Cooperative Feder'n.	Vancouver & Prince Rupert	14	---	2,415	43,030	---	---	45,459
Halibut Producers Coop.	Alaska	238,365	---	124,670	53,208	---	---	416,243
Harbor Sea Foods Co.	Bay Center, Washington	96,000	---	---	25,000	---	---	121,000
Harbor Sea Foods Co.	Wrangell, Alaska	---	---	---	64,483	---	---	64,483
Kayler-Dahl Fish Co.	Petersburg, Alaska	---	---	---	87,200*	---	---	87,200
King Crab, Inc.	Kodiak, Alaska	---	66,803	17,737	---	---	---	84,540
Lazio Fish Co.	Eureka, California	237,912	---	---	145,944	---	---	383,856
New England Fish Co.	Oregon Plants	60,000	---	120,000	---	---	---	180,000
Pacific Shrimp, Inc.	Warrenton, Oregon	---	---	---	4,740	---	---	4,740
Seaside Clam Co.	Warrenton, Oregon	9,000	---	8,000	12,000	---	---	29,000
Seaport Fish Co.	Seattle, Washington	---	---	14,613	---	---	---	14,613
Wakefield Deep Sea Trawlers	Sand Point & "Deep Sea"	---	1,200,000	980,000	---	---	---	2,180,000
Washington Fish & Oyster Co.	Seattle, Washington	3,841	---	3,093	2,100	880	8,084	17,998
Whitney & Company	Seldovia, Alaska	---	320,000	365,000	---	---	---	685,000
TOTAL		792,260	1,726,303	1,674,020	471,714	1,380	1,702,900	6,368,577

* Includes 8,678 lbs. whole shrimp.

1959-FILLET IMPORTS TO U.S.

(Pounds)

Country	Oct. '58	Nov. '58	Dec. '58	Jan. '59	Feb.	March	April	May	June	July	August	Sept.	TOTAL
Canada	18,030,000	859,600	6,202,000	10,723,000	7,258,000	6,490,000	7,650,000	8,625,000	9,956,000	17,541,000	14,146,000	10,750,000	118,230,600
Cuba	61,000	12,000	61,000	45,000	88,000	94,000	35,000	29,000	86,000	13,000	35,000	----	559,000
Denmark	630,000	304,000	498,000	652,000	728,000	2,214,000	2,627,000	1,976,000	1,492,000	1,674,000	1,666,000	1,689,000	16,150,000
W. Germany	320,000	181,000	114,000	335,000	67,000	218,000	109,000	63,000	112,000	229,000	100,000	209,000	2,057,000
Iceland	3,721,000	1,522,000	3,821,000	5,511,000	759,000	1,645,000	7,876,000	5,933,000	1,744,000	3,315,000	830,000	2,042,000	38,719,000
Japan	1,138,000	1,159,000	1,454,000	1,343,000	1,195,000	1,407,000	1,593,000	1,231,000	1,063,000	836,000	139,000	1,653,000	14,211,000
Mexico	55,000	110,000	73,000	32,000	73,000	84,000	131,000	224,000	247,000	331,000	284,000	228,000	1,872,000
Netherlands	56,000	44,000	75,000	48,000	----	74,000	207,000	32,000	22,000	24,000	27,000	2,000	611,000
Norway	1,863,000	1,191,000	786,000	4,181,000	1,333,000	1,476,000	1,139,000	1,453,000	126,000	1,040,000	896,000	1,764,000	17,248,000
Peru	----	---	----	----	----	----	----	39,000	14,000	61,000	576,000	138,000	828,000
Others	695,000	766,000	645,000	1,900,000	626,000	776,000	1,209,000	669,000	905,000	731,000	984,000	915,000	10,821,000
TOTAL	26,569,000	6,148,000	13,729,000	24,770,000	12,127,000	14,478,000	22,576,000	20,274,000	15,767,000	25,795,000	19,683,000	19,390,000	221,306,600

fillets — probably actually halibut flitches—frozen in Alaska was by far the largest ever reported to Pacific Fisherman Yearbook, reaching 1.2 million pounds.

Early in 1960 Alaska fish freezing narrowly escaped a major disaster when a Ketchikan waterfront fire threatened the great plant of the Ketchikan Cold Storage, and actually destroyed the company office.

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U. K. HERRING

● The herring fisheries of the United Kingdom are conducted principally in near waters surrounding the mainlands of England and Scotland. The only area in which there is little herring fishing is that off the south coast of England.

In the Minch, the sea area between the west coast of Scotland and the Hebrides, the herring fishery is productive to a varying extent nearly all the year round. In other areas it is broadly seasonal with, however, considerable variations from year to year and from place to place in the occurrence and in the condition of the herring.

The Export Market

● Since the first World War the economics of the industry based upon the British herring fishery have undergone a revolution. Up to that time the demand from Baltic countries for British salt-cured herring in barrels had provided an almost insatiable outlet. Gutting and salting herring into barrels for export, with the attendant coopering, constituted the major part of the industry ashore.

With the establishment of the U.S.S.R. a new situation arose. Imports of consumer goods into Baltic countries were severely limited and exports from Britain of salt-cured herring declined heavily. This abrupt decline produced a major crisis in the industry which, in 1935, the Herring Industry Board was set up by the British government to resolve. In the past 25 years (and particularly since the late war), the industry has been transformed from a predominantly export one to one that supplies the home demand for a larger range of products, two of which—herring meal for compounding with animal-feeding stuffs and herring oil for a variety of uses—replace former imports of those commodities to a certain extent.

Position in 1959

● The basis on which this transformed structure of the industry are built remain the same, however. These are: the stocks of herring in the sea and the men and gear to bring them ashore. The condition of the stocks, especially in the southern North Sea, has in the past three years been giving rise to increasing anxiety. As to whether their near-catastrophic decline can be ascribed to natural or to man-made causes, or both, the evidence is inconclusive. In 1959 there appears to be a marked improvement in the occurrence of herring in the Scottish sea-areas. It has yet to be seen whether this will be shared by the East Anglian fishery in the southern North Sea.

The Fleet and Catching Power

● Catching-power in the British herring industry, in terms of men and boats, is down to the lowest level on record. Figures alone, however, do not give a true comparison because modern equipment is so much more effective than that of a generation ago. Electronic shoal-locating mechanisms, then unknown, are now in almost general use. Methods of capture have changed little in the same period but experiments are continuing this year in the use of nets made of synthetic fibres instead of cotton. These nets are expected to have the advantages of greater strength and of being rot-proof. Under modern domestic conditions the processes of repairing, traditionally done by fishermen's womenfolk, offer increasing difficulties.

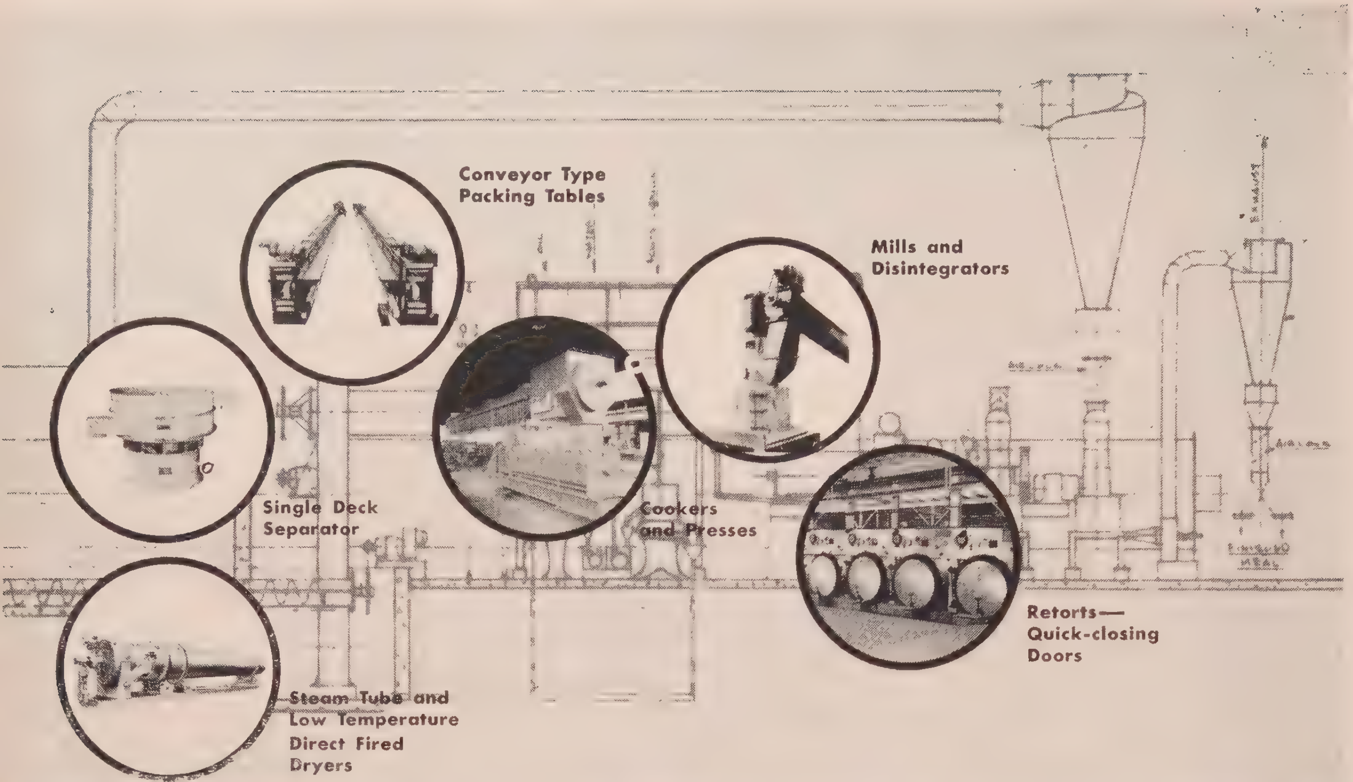
Herring Industry Board

● The need of the industry, now, is both for more vessels and for crews to man them. In the long run these can only be provided and maintained by adequate financial returns to those engaged. This is the constant aim of the Herring Industry Board, a Statutory Authority set up by the Government in 1935 for the purpose of reorganizing, developing and regulating the Industry. The Government appoints the three members of the Board and an Advisory Council drawn from various branches of the Industry to assist them with advice on trade matters.

TOTAL LANDINGS OF HERRING: DISPOSALS FOR HUMAN CONSUMPTION AND RESIDUAL BALANCE FOR INDUSTRIAL PURPOSES

YEAR	TOTAL LANDINGS CRANS	HUMAN CONSUMPTION		INDUSTRIAL PURPOSES	
		CRANS	PER CENT OF TOTAL	CRANS	PER CENT OF TOTAL
1953	1,283,144	681,083	53.1	602,061	46.9
1954	1,114,655	643,155	57.7	471,500	42.3
1955	930,448	486,309	52.3	444,139	47.7
1956	771,879	499,816	64.8	272,063	35.2
1957	683,683	457,404	66.9	226,279	33.1
1958	633,570	458,347	72.3	175,223	27.7

A cran is a measure containing an average weight of 392 lbs.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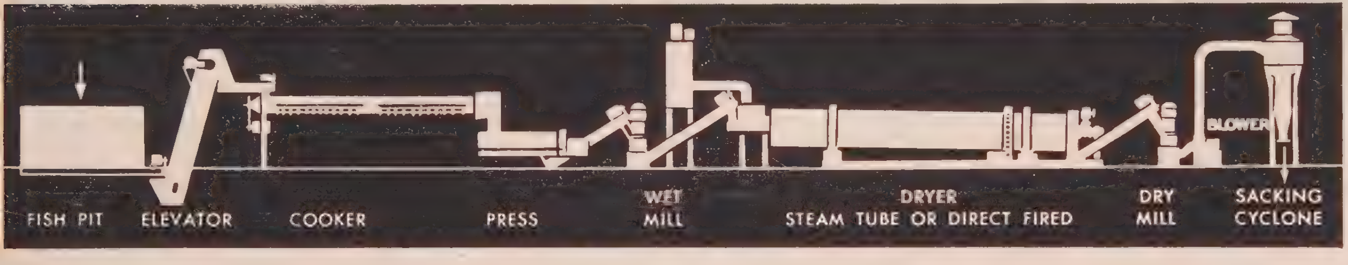

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BY-PRODUCTS

• Fishery by-products of Pacific North America maintained their improved position in 1959 despite the drop in California sardine fishing; but the year was a disappointing one from the standpoint of growth and earnings.

To some degree the checked growth derived from market weakness, as witness the shut-down of the Canadian herring operations this middle of December, due to prices which made profitable reduction impossible.

Despite this fact, but with no strike during the main producing season, British Columbia gained over 1958, more than offsetting the decline due to reduced sardine catches in California.

Alaska did a bit better in herring, thanks to a good run in Southeast; but was still far below the level of former years.

• Bering Sea reduction activities of the Japanese were doubled in 1959, with two factoryship-and-fleet units active where the *Kinyo Maru* had pioneered in 1958.

Continued success in this area assured another doubling of effort, with four fleet units already licensed for the Bering Sea reduction business in 1960. All of these vessels are being equipped with Atlas reduction systems of Danish manufacture.

The Japanese operations in Bering Sea thus far have been supplied by trawlers, utilizing bottomfish as their primary raw material. However, action of the International North Pacific Fisheries Commission in removing from abstention from fishing by the Japanese high seas herring off the Alaska coast is expected in 1960 to see some experimental fishing of this species in Bering Sea.

It is understood that the four factoryship-and-fleet units will have several herring fishing vessels in addition to their trawlers. These craft will seek to determine the size and character of the herring populations in Bering Sea, and how they can be fished effectively on the high seas.

• Part at least of the weakness of the fish by-products market—and particularly of fish meal—is believed to trace to the remarkable growth and productivity of the industry in Peru.

That South American nation, whose industrial fishery has developed barely a decade ago, in 1959 *may* have been the world's largest producer of fish meal. If by chance it did not reach this front-rank position in 1959, that it will do so in the future appears obvious, for the Peruvian government late in 1959 granted permission for doubling the plant capacity for anychovy reduction.

• Peru's projected doubling of its national production of anchovy meal is contained in Supreme Decree No. 09, which entered into force late in 1959.

This decree wholly supersedes that of 1956, which limited expansion of the industry. It also modifies the supplementary decree of 1958 affecting fish reduction.

The new decree does these things:

1. Authorizes licensing the installation of additional land reduction plants to a capacity not exceeding that installed to October, 1959; thus doubling present capacity.
2. Limits licenses to persons or corporations with "sufficient economic means to meet the investment required to complete the enterprise."
3. Provides "an indispensable" requirement that the person seeking license must own the vessels which will supply the raw material. Annual proof of this ownership is required.
4. Requires plants licensed must be installed within the year the license is authorized.
5. Specifies plants now in operation "will adjust their licenses in accordance with the provisions of the present decree" within 12 months. (Whether this will require acquisition of all fishing boats is not clear, but this would appear to be indicated.)
6. Directs that individual licenses shall limit tonnage to that which can be processed in 20 hours per day and 300 days per year.

Pacific Coast Fish Oil and Meal - 1959

Regions	Fish Meal Tons	Herring Oil Gallons	Sardine Oil Gallons	Other Fish Oils Gallons	Total Oil Gallons	Regions
Alaska	8,640	1,717,784	---	11,000	1,728,784	Alaska
British Columbia	50,233	5,706,676	---	585,600	6,292,276	British Columbia
Washington	2,100	60,000	---	160,000	220,000	Washington
Oregon	1,600	---	---	123,000	123,000	Oregon
California	23,240	---	218,620	516,046	734,666	California
TOTALS	85,813	7,484,460	218,620	1,395,646	9,098,726	TOTALS

Canadian Oil figures have been converted from Imperial Gallons to American Gallons.

• Reason for the requirement that all anchovy fishing boats be owned by the plant-owning companies is said to be because the attractions of anchovy fishing has drawn boats from fishing bonito and fresh fish for the local markets to such an extent that these branches of the fisheries have been seriously handicapped.

• Utmost significance is attached by informed persons to the preamble of Decree No. 09, for it says, according to translation from the original Spanish:

Since the decree of 1956 "there has been no appreciable diminution of the anchovy population, but rather fish of that species have increased in number continually; and in similar manner the guano bird population has recovered."

Furthermore, the decree confirms Peru's notably liberal attitude toward business and industrial development, saying:

> *"It is in the interest of the State to stimulate the commercial development of the country on the basis of free enterprise under a regulation which does not prejudice natural sources of national wealth, and provides sources of labor.*
>
> *"To that end the State should give to the fishing industry an opportunity for expansion, and at the same time should regulate its activity in protecting the resource which it exploits."*

• The decree excludes three sectors of the coast from areas for which licenses may be granted. These three locations are at present centers of fish reduction with numerous plants. They are: Chimbote-Samanco, Callao-Pucusana, and Languna Grande.

• Chile may be the scene of the next great advance in the South American fisheries.

This conclusion can be reached on the basis of evidence developing during 1959, when strides toward the modernization of Northern Chile's industrial fishing were taken by business leaders of that country, in company with United States specialists in the field.

Engaged actively in building of vessels in the United States, and the develpoment of shipyard and by-products facilities in northern Chile, are Peter Schmidt of Marine Construction & Design Co., and J. Howard Smith, leader in the Atlantic menhaden industry.

British Columbia Herring

• Adverse market developments for fish oil and meal in the late weeks of 1959 interrupted British Columbia herring operations at the end of that year, after above-average fishing for the season to that time. Production for the season to the end of December was almost exactly comparable with that of the previous season to even date.

Early in 1960 the British Columbia herring operations were shut down over most of their range as the operators declared their inability to continue manufacturing at the reduced level of market prices.

In Northern British Columbia the members of the Prince Rupert Fishermen's Cooperative decided to continue operations and at presstime of this *Yearbook* a fleet of 13 seiners was fishing, the only element of the Canadian herring industry active early in 1960.

• Despite a strike of fishermen during the early part of the 1959-60 season, because of disagreement over prices and other terms, British Columbia's herring industry rolled up a fairly impressive production record during that season.

Compared with the 1958-59 output, the season's showing was not remarkable. In fact, there were indications that the totals might finally be approximately the same. Performance, however, was notably higher than in 1957-58, when operations were affected by a strike, and in the two previous seasons.

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Low prices for oil and meal provided little incentive for production. These products face world competition, and other important sources are the U.S., Norway, Iceland, South and Southwest Africa, and Peru, with most of these countries showing substantial increases in production in recent years.

● To illustrate the industry's situation, the 1954-55 production of herring oil sold at an average price of 8¼¢ a pound. The 1955-56 production brought 9¼¢. In the following season the price was up fractionally and the bulk of the production was sold at close to 9¾¢. The slump in the market started in the summer of 1957 when the summer production was marketed at about 9¢. When normal operations were resumed after the strike-bound 1957-58 winter the average price had declined to less than 7½¢.

During the past season, sales have been made ranging from 6½¢ to 6¾¢; in other words, the dip in the price of herring oil has been some 30% from the 1956-57 high.

The pattern for herring meal has been similar. Prices have ranged from a low of $1.94 U.S. funds per protein unit in 1956 to a high of $2.25 in 1958. Part of the year's production was sold as low as $1.70 per protein unit and if B.C.'s producers were competitive with other sources landing in San Francisco the price would have been about $1.50.

● By the end of 1959 meal production was about 20,500 tons, compared with 24,000 tons a year previous, and oil production was in excess of 3,200,000 imperial gallons, the comparable figure for the previous year being 3,197,000 gallons.

As a result of the signing of a new agreement between operators and the men who man the province's 78-vessel herring fleet, stability over the next couple of years was assured. The two-year contract, first in the industry, set the same prices as had prevailed in the preceding season—$13 a ton for reduction fish and $16 a ton for herring to be canned or salted.

Tow-off skippers receive a 25% increase, and tow-off crews a 15% increase in their shares. The fishermen were not particauarly happy about the settlement because it had the effect of freezing earnings at a lower level than that prevailing 10 years ago. However, in the face of the market depression operators felt they were not justified in offering more, and both sides were anxious to work out a plan that would reduce the possibility of interruption in operations.

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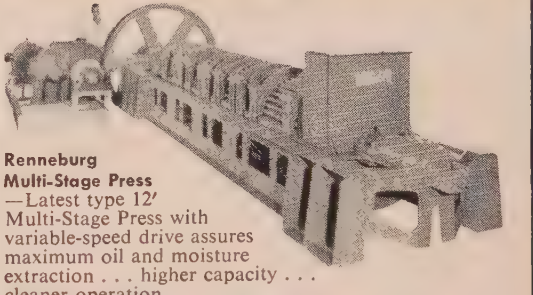

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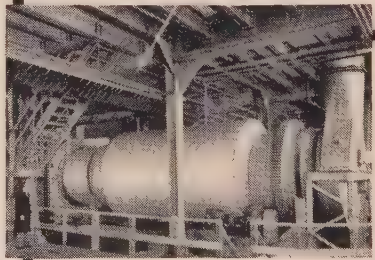

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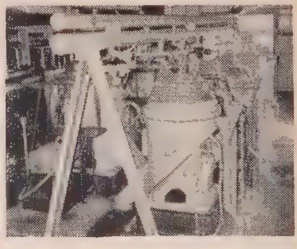

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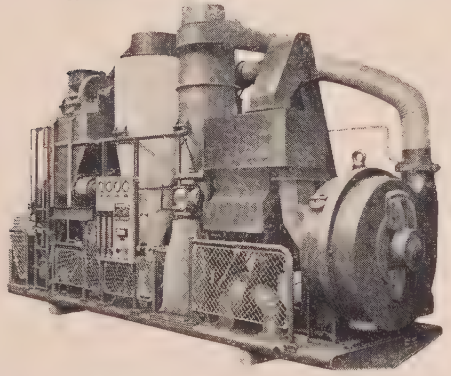

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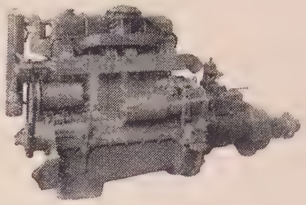

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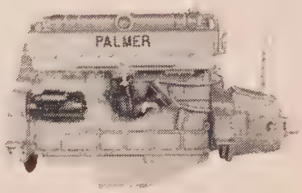

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PACIFIC WHALING

● Whaling operations off the British Columbia coast in 1959 indicated an improvement in skill and efficiency, but, as in other recent years, they were an economic disappointment. More whales were killed than ever before in that area, but depressed markets made the fishery again unprofitable.

A total of 869 whales were delivered to B. C. Packers' shore station at Coal Harbor, Vancouver Island, by the company's fleet of six vessels, or an average of about 140 to each boat, compared with some 105 in recent seasons. But in terms of tonnage, the 1959 season was not as productive as in the previous year.

Because the whaler crews are paid on an incentive arrangement based on the number of whales taken their earnings were better than formerly, but returns to the company were not so satisfactory.

Here is a breakdown by species: Finbacks, 369; Sperm, 260; Sei, 185; Blue, 28; Humpback, 27.

A larger quantity of whale meat was canned during the past season, for animal consumption—mostly mink feed and dogfood. This marked a relatively new development, the containers being 6½ lb. No. 10 cans.

Increased efficiency of the whaling crews is indicated by the fact that 95 more whales were taken in 1959 than in 1958 but fewer of the larger varieties were killed.

The whaling industry in the North Pacific continues to suffer from a decline in market prices due in part to the increasing competition from other countries, such as Iceland, Angola, Peru and Japan as well as from the great Antarctic whaling operations in which several nations participate.

● Pt. San Pablo, Richmond, Calif., continued in 1959 to be the sole center of American whaling, with two operating stations.

Del Monte Fishing Co., now in its fourth year of operation, wound up its season with a catch of 169 whales 10 sperms, 20 sies, 3 blues, 59 finbacks, 76 humpbacks and 1 bottlenose.

This kill was a little less than 1958, when the smaller catch was attributed to bad weather.

The company had three killer boats operating: *Dennis Gayle, Allen Cody*, and *Donna Mae.*

According to company officials, the market for whale oil was in bad shape during the season, with difficulty in finding buyers. The meat market was good, most of it being converted into animal food.

Golden Gate Fishing Co., also at Pt. San Pablo, processed 140 whales, 30% humpback and the rest finback and sie.

The firm had two killer boats operating, *Lynnann* and *Sioux City*. Some 1,500,000 lbs. of fresh whale meat was shipped to Los Angeles for processing into pet food.

More refrigeration was installed at the plant including a 40-ton Frick ice machine.

Officials of the firm felt that they had a fair year, but the meat scrap and oil market were down.

Whaling is Big Business

● Another branch of the Peruvian fishery industry that shows a great deal of promise is whaling. With the establishment of the Ballenera del Norte plant at Tierra Colorado in Northern Peru, the Republic now boasts of three modern whaling plants dedicated to the production of meal, oil and, sometimes, parts of the whale itself. These are coming into demand from scientific institutions which are showing interest in study of whales as part of the general study of anatomy, and in whales as a possible source of vitamins.

Exports of whale meal and oil were up substantially in 1958 over 1956, with figures for 1957 not immediately available.

The United States is the principal market for Peruvian whale products, in 1958 taking 5,273.6 metric tons of oil, to 130 tons for West Germany, 1,500 for The Netherlands, and 448. for Norway. This latter item is of special interest, as Norway is the largest whaling nation in the world, with an enormous export trade in whale products. The imports from Peru are probably sperm oil or spermaceti, whose availability for Norwegian whaling operations is believed to be limited.

United States imports of Peruvian whale meal took 1,144.5 metric tons in 1958, with the balance of 550 tons going to Great Britain.

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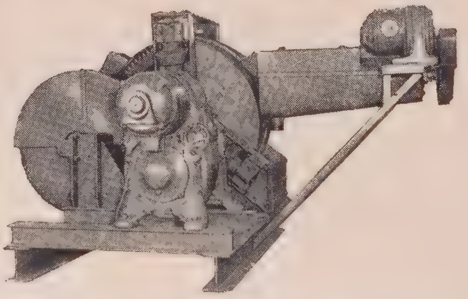

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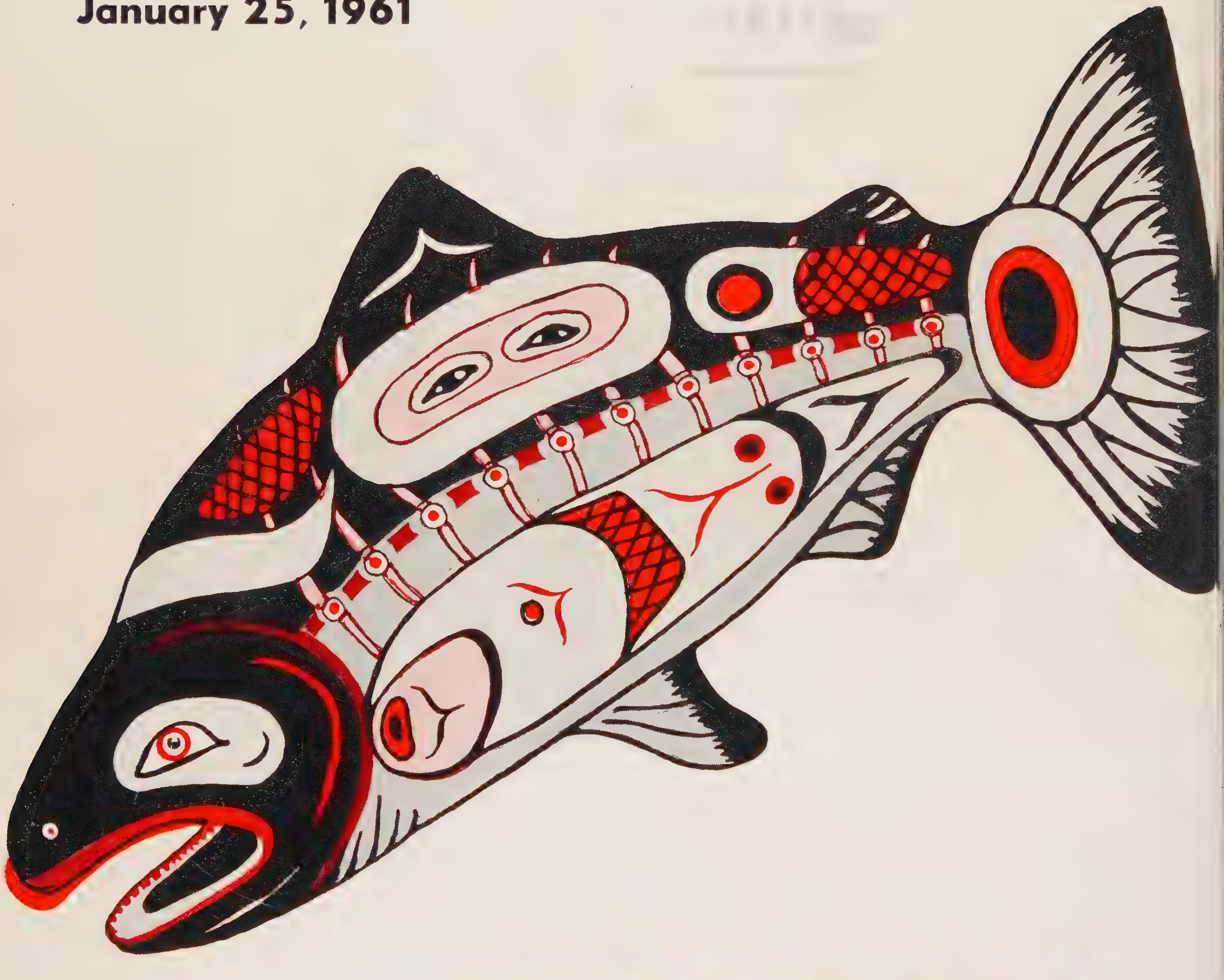

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THE COVER

- Meaning, origin and artistic background of the cover design of this 1961 Pacific Fisherman International Yearbook Number are discussed on Page 15 by E. L. Keithahn, the artist to whom we are indebted for the painting.

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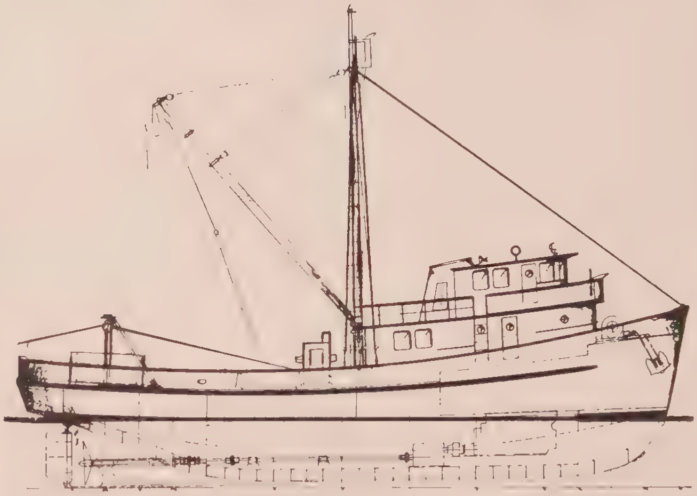

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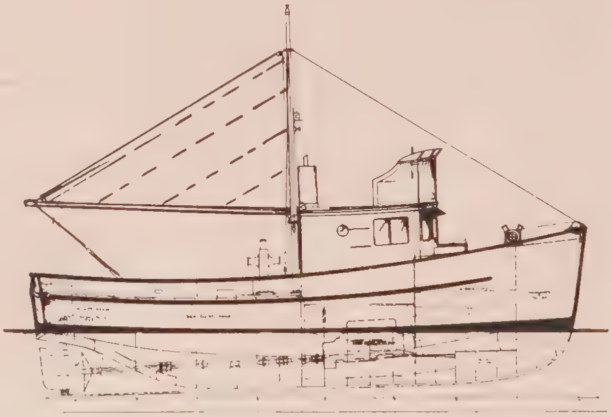

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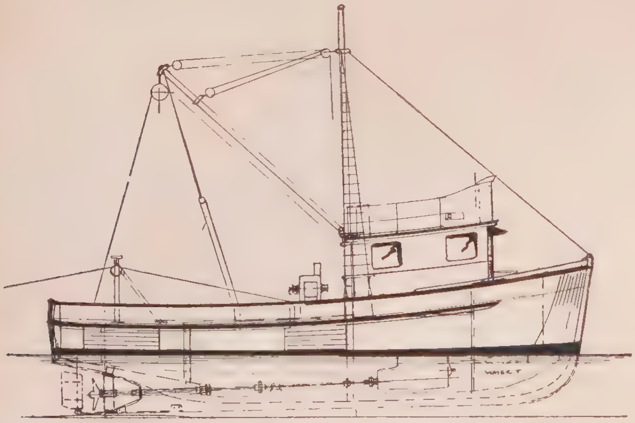

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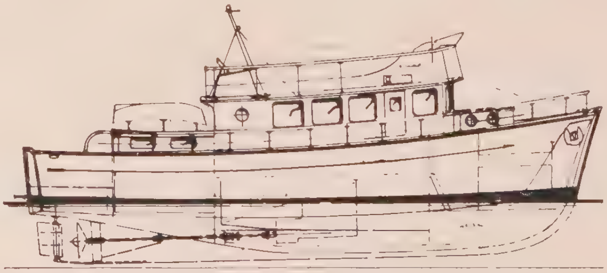

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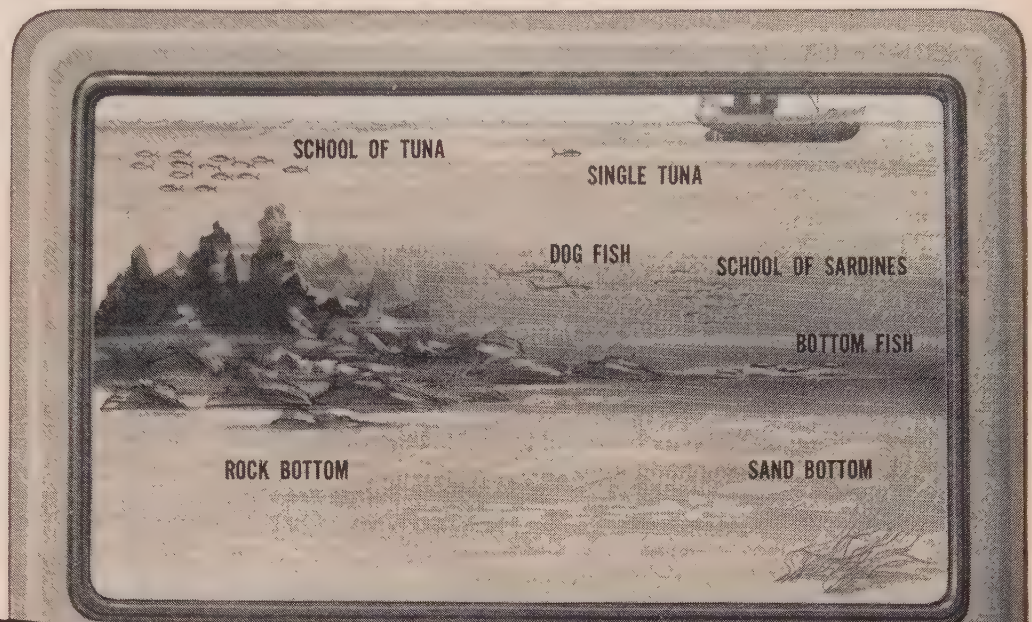

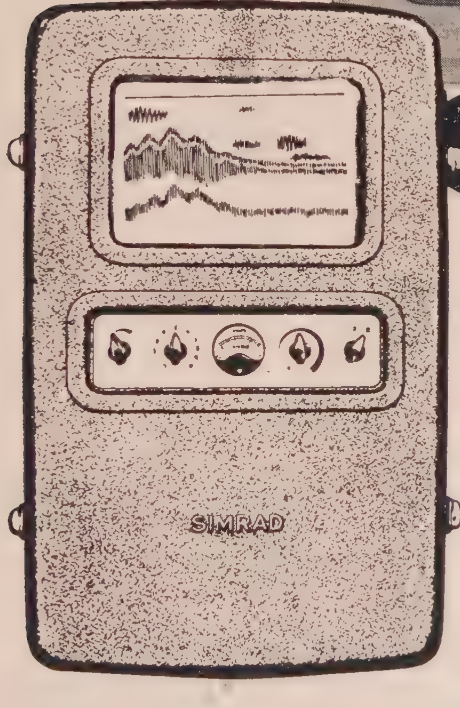

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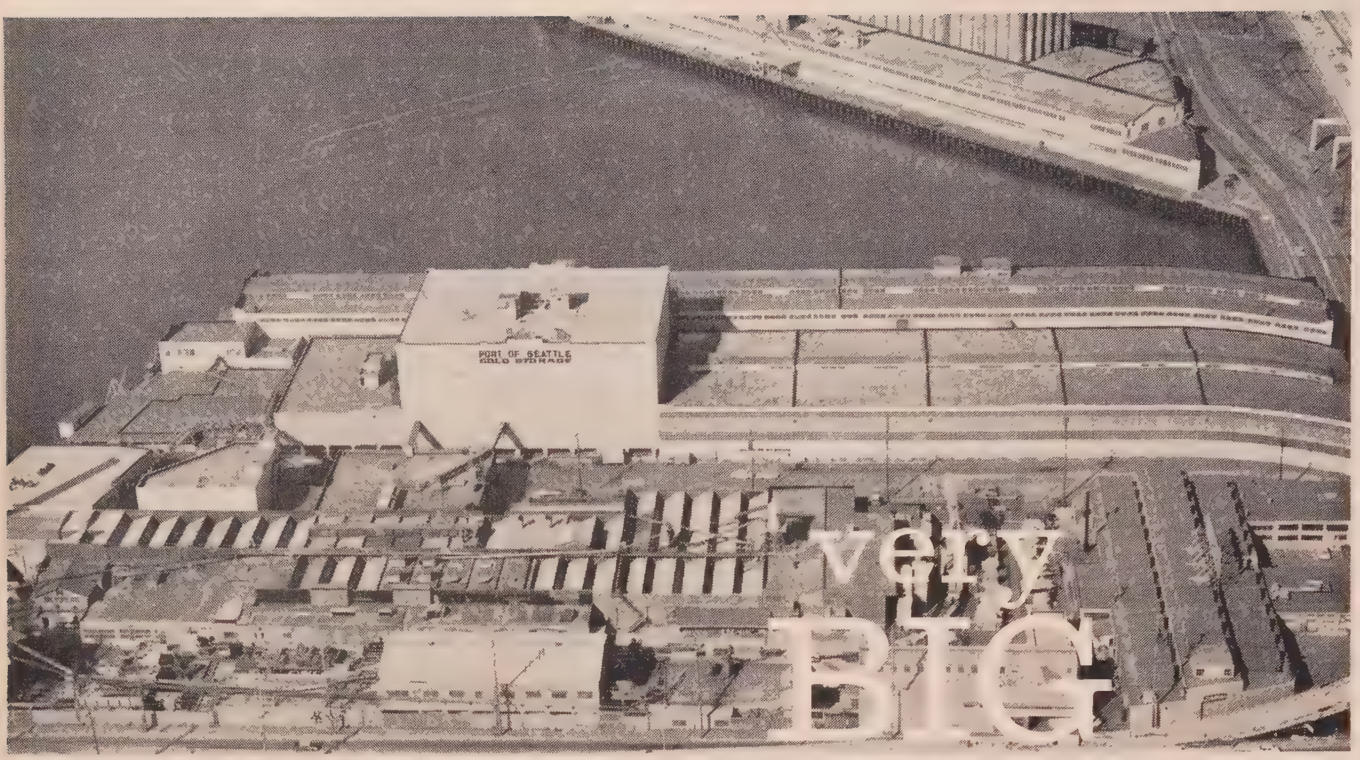

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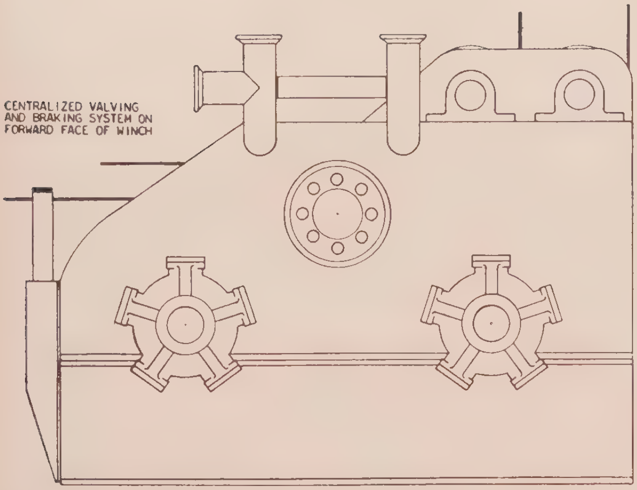
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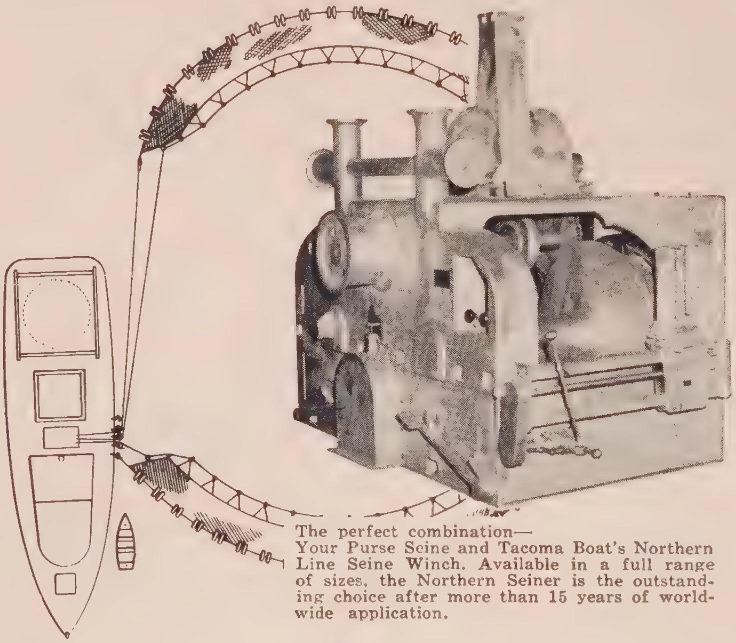

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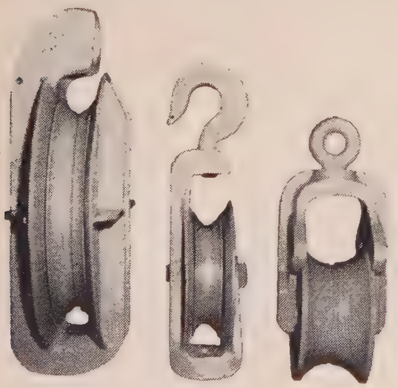

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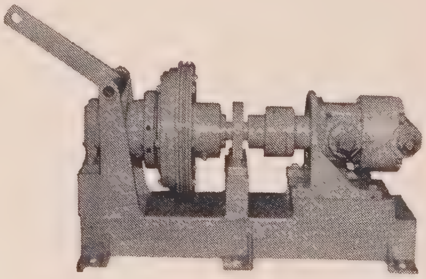

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140 TONS OF TUNA IN A SINGLE SET!

Nick Marincovich and his crew of the **New Sea Rover**, purse seiner out of San Pedro, Calif., made this phenomenal catch with a MOMOI Hi-Tenacity Nylon Tuna net.

Capt. Marincovich says: "After trying many other brands of netting, I am now settling on Momoi Hi-Tenacity tuna netting—strong, easy to work with, and you can depend on it. It is always the same high quality."

Tuna fishing demands the best. Compare MOMOI Hi-Tenacity tuna webbing for uniform high quality. You can pay more, but you can't buy better!

¡140 toneladas de atún en una sola tirada de red! Esta fenomenal pesca la logró el Capt. Nick Marincovich del barco New Sea Rover, San Pedro, California, usando red MOMOI Hi-Tenacity Nylon.

Dice el Capt. Marincovich: "Al fin de probar muchas marcas, he determinado usar la red MOMOI Hi-Tenacity Nylon. Es fuerte, fácil de manejar, y siempre de la misma finísima calidad".

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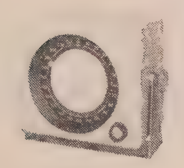

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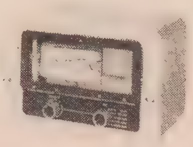

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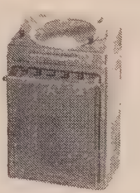

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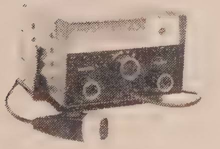

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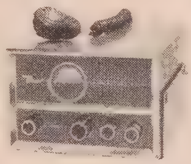

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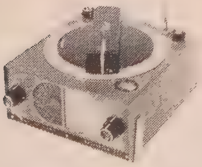

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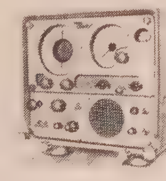

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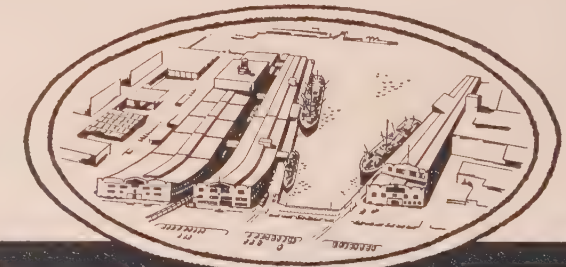

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UNION FISHERMEN'S CO-OPERATIVE
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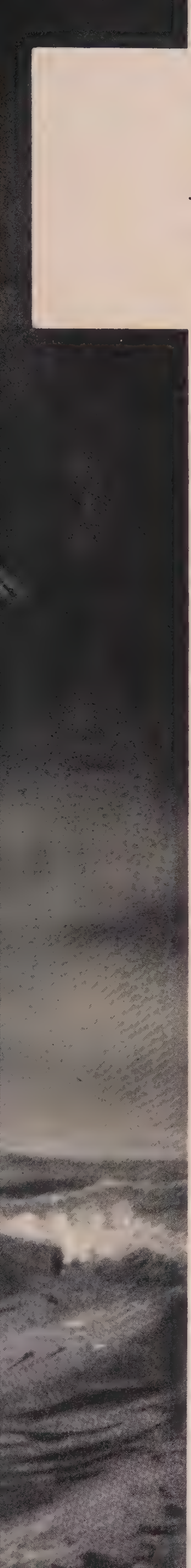

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OPERATING PLANTS IN ALASKA

HAWK INLET **FALSE PASS**

SALMON

- With a gigantic run of Red salmon to Bristol Bay, North American salmon canning operations in 1960 produced a better overall pack of salmon than the year before—better in size and *much* better in value.

But this bright picture was limited to Western Alaska, to the seas and coast west of Prince William Sound. There, in those western waters, fishing was *good*.

Elsewhere, and particularly in Southeast Alaska, northern British Columbia, the Columbia River, and during the fall months on Puget Sound, it was *poor*, to the point of failure in some areas.

The year's history emphasized the volatile character of the salmon business. For some firms it was rich, for others desperately poor.

Bristol Bay had more fish than the fleet could catch or the canneries could pack; but in Southeast Alaska the pack was the poorest since 1898. Columbia River's canned pack was the lowest in history; British Columbia's lowest since 1906, excepting 1921, which was a year of economic disaster, not of salmon scarcity.

- North American salmon operations in 1960 were marked by strong regional variations in production and prosperity, with a distinct breaking-point about the longitude of Kodiak Island. West and north of this zone the runs were good to great. East and south they were acutely disappointing.

The separation generally was geographical rather than biological. With some rather definite exceptions, all species to Westward tended to be strong in numbers, while in the long stretch of coast from Prince William Sound to the Columbia River all species were scarce, and some crushingly so.

So much for generalities. Speaking more specifically, it is not hazardous to point to the great Bristol Bay Red salmon run as the feature of the 1960 salmon business—and that goes for the past 10 years. So far as Bristol Bay itself is concerned, the stupendous homecoming of the Reds in 1960 was the greatest in any year since 1938.

No, the *pack* was not so great as in several intervening years; but we were speaking of the *run*. Perhaps never, and certainly not since Man has tried to keep track of the escapement, have so many salmon passed upstream in Bristol Bay's rivers to reproduce the species. *How* many? Something in excess of 25 million fish.

- A year ago in this space in the 1960 Yearbook Number, discussing the prospects for 1960, we wrote:

"Bristol Bay in 1960 faces the *possibility* of a rich Red salmon run. *If* it comes, the salmon industry will be pressed to cope with it, and the Alaska State Department of Fisheries will enter upon its first year of full authority face-to-face with a staggering problem in administration, conservation, and wise-use-without-waste."

The salmon came, and with them the problems we had foreseen; but they were problems gladly faced, and were resolved as well as was humanly possible in the presence of a flood of salmon surpassing the industry's dreams.

The Alaska fisheries authorities in

1960 - Pacific Canned Salmon Packs and Values

DISTRICT	RED, SOCKEYE or BLUEBACK		PINK		CHUM		SILVER or COHO		KING or CHINOOK & STEELHEAD		TOTAL	
	Cases	Value	Cases	Value	Cases	Value	Cases	Value	Cases	Value	Cases	Value
Alaska	1,171,635	$42,358,824	680,695	$18,386,676	577,523	$14,777,416	76,024	$2,360,864	44,150	$1,410,784	2,550,027	$ 79,294,564
Washington	111,417	6,072,638	2,190	66,470	42,639	1,043,868	4,518	179,719	8,324	411,155	169,088	7,773,850
Oregon	6,637	355.334	---	---	2,593	57,046	3,753	155,370	48,486	2,218,551	61,469	2,786,301
Total U.S.A.	1,289,689	49,958,431	682,885	18,453,146	622,755	15,878,330	84,295	2,695,953	100,960	4,040,490	2,780,584	91,026,350
British Columbia	226,905	11,799,060	219,624	5,600,412	86,800	1,866,200	92,347	3,693,880	6,413	256,520	632,089	23,216,072
GRAND TOTAL	1,516,594	$61,757,491	902,509	$24,053,558	709,555	$17,744,530	176,642	$6,389,833	107,373	$4,297,010	3,412,673	$114,242,422

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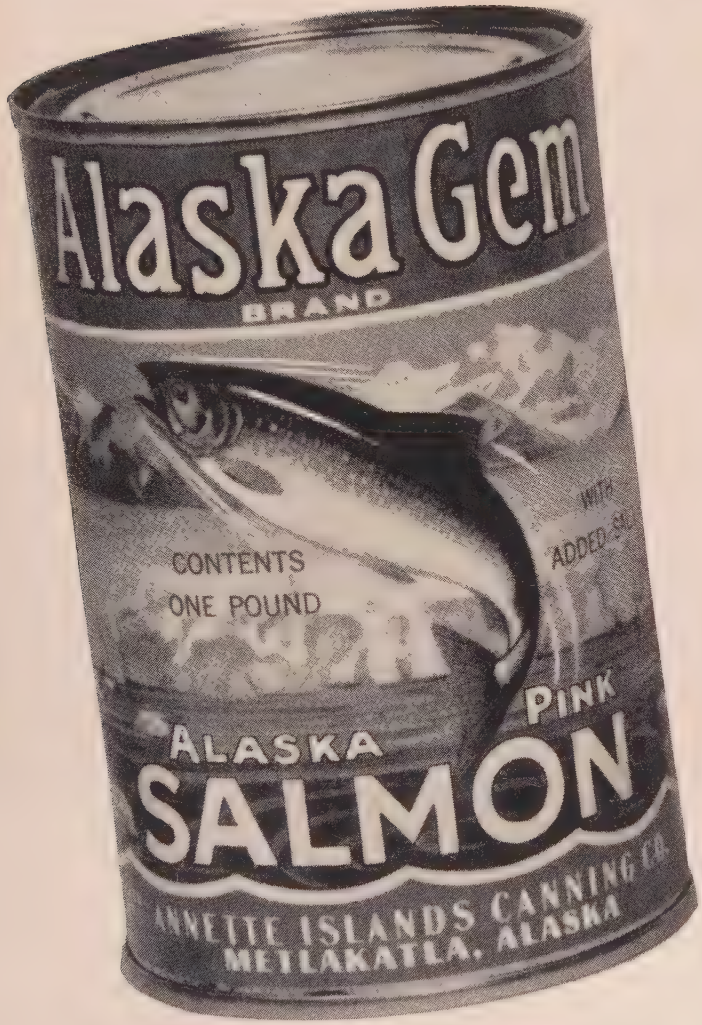
SO RICH IN FLAVOR . . . SO NATURALLY GOOD

A Favorite in the Most Discriminating Markets



There's good reason for the popularity of Alaska Gem and other salmon canned by Annette. Our cannery, ideally located adjacent to fishing grounds, is always assured a supply of fine, prime ocean-caught fish . . . salmon that are naturally best . . . fresh-caught and canned while at their best. Particular pride is taken, too, in handling and processing, in the cleanliness and sanitation of our modern cannery. All to safeguard the quality that is our reputation.

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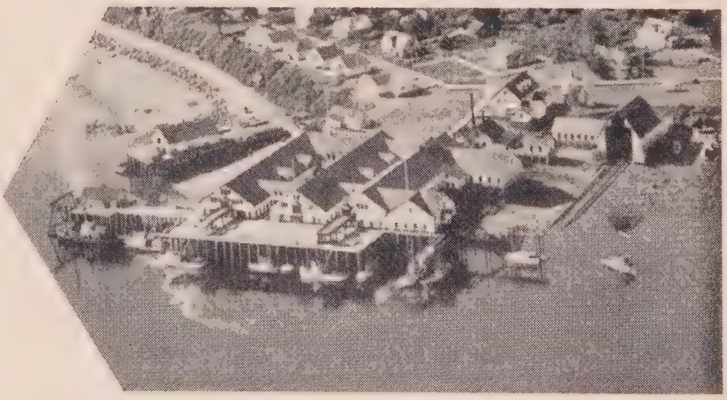

Annette Islands
CANNING COMPANY

METLAKATLA,
ALASKA

COLMAN BLDG.
SEATTLE 4, WASH.

1960-PACIFIC CANNED SALMON PACK

(Figures reduced to uniform basis of 48-lb. cases.)

Species	Alaska	Puget Sound	Columbia River	Coastal Areas	Total U.S.	British Columbia	GRAND TOTAL
Red or Sockeye	1,171,635	109,200	8,054	800	1,289,689	226,905	1,516,594
Pink	680,695	2,190	---	---	682,885	219,624	902,509
Chum or Keta	577,523	40,303	3,929	1,000	622,755	86,800	709,555
Coho or Silver	76,024	3,129	5,142	---	84,295	92,347	176,642
Chinook or King	44,150	1,009	52,870	200	98,229	5,913	104,142
Steelhead	---	---	2,731	---	2,731	500	3,231
TOTAL	2,550,027	155,831	72,726	2,000	2,780,584	632,089	3,412,673

particular acquitted themselves most creditably, earning the ungrudging applause of the industry they regulated.

- So much for Bristol Bay.

The Alaska Peninsula district, Kodiak Island and Cook Inlet all were good—better than expected, perhaps as good as hoped.

Coming to Prince William Sound, the reverse was true. The hoped-for run did not materialize; and southward down the coast the story was repeated and repeated.

Pinks particularly were short, inexplicably so; and in Southeast Alaska the total pack was only a little more than 300,000 cases.

Northern British Columbia was almost as bad.

Sockeye running to the Fraser were as abundant as expected, perhaps a little more, but the catch was the poorest in four years—since the last year of the cycle, which is the weakest of all in the Fraser complex.

Chums, Silvers and Kings in the southern segment of the salmon's range were very scarce; and the demand for the fresh, frozen and cured fish trade was so insistent, and prices so high, that the canned packs approached the all-time lows of these categories in the region.

- What of 1961?

Bristol Bay should be good again; and this is the stronger year for Pinks in most areas. However, with the exception of the favorable outlook for Bristol Bay, the prospect is not bright.

The Fraser *could* yield a great run on the basis of a fantastic seaward migration of smolts due to return in 1961; but the evidence points to low marine survival and the biological forecast is only that the prospect is for about twice the yield of 1960, but far short of earlier anticipations.

The Cover Decoration

- Cover of this 1961 *Pacific Fisherman International Yearbook* is "a modern adaptation of a painting of the King salmon in the style of the Indians of the Northwest coast," in the explanatory words of E. L. Keithahn, curator of the Alaska Historical Library and Museum, who was also the artist who created the original from which our cover drawings were made.

Because of the imperfect understanding of this primitive art form of the Northwest Coast of the Americas, a form gradually coming into renewed recognition, we asked Mr. Keithahn to write for this Yearbook a thumbnail discussion of this Indian art of which his King Salmon painting is a modern example. He is eminently qualified to do so, for he is an internationally known specialist in the history and art of the area of which Alaska is the head.

In his words:

Northwest Coast decorative art is a style of decoration for ceremonial objects that was employed by the Indians of the Northwest Coast from Puget Sound to Prince William Sound at the time this coastal area was first seen by Europeans. Centering on the Queen Charlotte Islands, peopled by Haidas, and the adjacent mainland where the Tsimshian lived, the art spread north through the lands of the Tlingit and south where it was taken up by the Kwakiutl, Nootka, Bella Bella, and tribes beyond, fading out on the fringes.

The style ignores perspective, employs distortion, dissection, suppression, and rearrangement of parts. It abhors vacuums and is often X-ray in effect. Symbolism is employed to the point of caricature wherein the recognition of the animal intended rests on the prominence of a single distorted feature.

All lines are curved, the reverse curve, the "eye & socket" and the "flicker feather" designs being employed in all compositions to depict ribs, joints, fins, scales, and feathers respectively. Colors are usually black, white, red and blue-green; and paint was a tempera made of local mineral pigments in a vehicle composed of masticated salmon eggs and saliva.

The art, which was practiced by professional artists, reached its major climax in the middle 1800's when these maritime Indians became wealthy from the sea otter trade. It dwindled almost to oblivion with depletion of the sea otter and enjoyed a secondary splurge around the turn of the century after gold was discovered at Juneau and Indians were employed as wage earners for the first time.

Lately the style is enjoying a new prominence, this time at the instance of white people who, at long last, are taking up the style almost totally discarded by the Indians, and finding new uses for it in architecture, ceramics and textiles.

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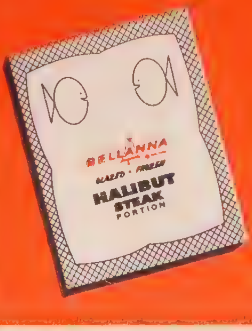


BELLANNA
STEAKS
STEAKS READY TO COOK SERVES 3 to 4
BELLANNA
FILLETS
FILLETS READY TO COOK SERVES 3 to 4

"PACKED WITH THE WIGGLE IN ITS TAIL"

SALMON
Alaska

- Alaska, with 2,550,207 cases of salmon packed in 1960, approached the 10-year average in volume—and far exceeded it in value—despite the failure on the Southeast area to measure-up.

Degree of failure in Southeast Alaska is evidenced by the fact that the 305,025 cases packed were less than half the pack of the preceding year; and *less than one-third the average production over a 10-year period.*

All varieties were off in Southeast Alaska, whose crushing failure was shared in all respects in northern British Columbia.

Prospects for this Southeastern district in 1961 are not bright, and fishing regulations established for the coming season contemplate close control in the interest of conservation and rehabilitation of the runs. At the same time, giving effect to the flexible management philosophy of the Alaska Department of Fish and Game, they will be subject to prompt modification—in either direction, open or close—as actual events may depart from expectations.

- Central Alaska swung back strongly in 1960 from its disappointing performance in 1959, the regional production being 1,200,310 cases, against 573,000 cases the year before.

The inherent steadiness of Central Alaska, when its enormous coastline is considered as a whole, was evident in the 1960 experience.

The season's pack was almost exactly in line with the 10-year average of 1,191,000 cases; and this close coincidence extended as well to the several species. For example, *Reds* were strong at 243,390 cases, more than twice the volume of the two preceding years, but closely in line with the 10-

WESTERN ALASKA CANNED SALMON PACKS

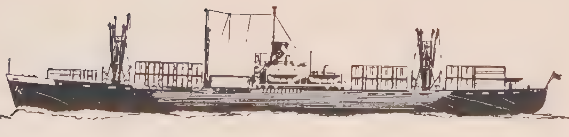
BRISTOL BAY AND YUKON (Cases)						YEAR	ALASKA PENINSULA, NORTH SIDE (Cases)						GRAND TOTAL
Reds	Pinks	Chums	Cohoes	Kings	TOTAL		Reds	Pinks	Chums	Cohoes	Kings	TOTAL	
1,588,008	....	24,559	1,456	9,197	1,623,220	1933	26,665	...	1,490	...	284	28,439	1,651,659
1,726,769	1,959	32,222	1,219	8,580	1,770,759	1934	87,379	...	974	...	217	88,570	1,859,329
231,014	....	6,995	223	660	238,892	1935	34,920	4	2,862	...	175	37,961	276,853
1,388,776	30,773	25,045	1,571	4,092	1,450,257	1936	38,930	293	1,511	...	214	40,948	1,491,205
1,421,369	....	29,286	138	6,897	1,457,690	1937	55,315	1	6,170	...	234	61,720	1,519,410
1,772,885	....	54,551	345	5,446	1,833,227	1938	73,942	...	5,063	...	1,053	80,058	1,913,285
1,059,181	....	88,272	....	5,038	1,152,491	1939	56,310	2	6,478	...	465	63,255	1,215,746
402,899	16,081	30,624	1,445	3,504	454,553	1940	56,158	...	4,914	...	79	61,151	515,704
577,024	9	50,901	3,436	5,785	637,155	1941	36,366	95	4,953	...	179	41,593	678,748
438,053	8,564	16,749	2,638	7,001	473,005	1942	....	...	....	...	...	....	473,005
1,275,212	.....	37,757	180	11,826	1,324,975	1943	39,330	54	3,680	...	56	43,120	1,368,095
954,694	3,911	31,838	2,408	5,420	998,271	1944	31,849	130	12,855	...	21	44,855	1,043,126
576,318	....	66,888	3,105	9,478	655,789	1945	32,342	127	25,007	...	22	57,498	723,287
628,240	4,073	36,436	2,663	10,768	682,180	1946	27,821	...	1,798	...	167	29,786	711,966
1,335,031	....	35,802	1,866	13,737	1,386,436	1947	25,675	...	6,047	8	71	31,801	1,418,237
1,212,233	3,148	64,167	4,140	13,576	1,297,264	1948	65,961	101	17,474	1,220	310	85,066	1,382,330
525,309	....	33,345	2,214	13,795	574,663	1949	10,612	...	2,954	2,349	179	16,094	590,757
577,158	1,607	16,588	2,840	13,217	611,410	1950	10,335	2	18,294	4,098	158	32,887	654,162
309,936	....	15,744	4,366	15,086	345,132	1951	29,656	75	9,777	3,637	242	43,387	388,519
715,083	1,339	31,457	1,661	19,236	768,776	1952	14,477	...	7,379	6,031	123	28,010	796,786
443,137	1	36,921	78	20,319	500,456	1953	17,391	1,175	9,157	3,301	396	31,420	531,876
307,469	4,441	31,694	1,630	8,453	353,687	1954	12,352	5,103	7,308	3,387	510	28,660	382,347
313,962	....	20,413	998	13,187	348,560	1955	20,508	91	2,266	550	474	23,889	372,449
531,100	3,918	24,178	4,130	9,357	572,683	1956	48,661	...	6,530	258	547	55,996	628,679
464,306	....	23,982	4,053	28,695	521,036	1957	20,192	2	7,160	1,025	455	28,834	549,870
242,440	62,229	35,088	10,583	24,836	375,176	1958	36,694	7	9,618	2,443	1,412	50,174	440,199
332,385	6	42,320	2,570	30,966	408,247	1959	43,368	47	7,241	312	1,773	52,741	460,988
852,645	11,897	102,834	2,370	32,364	1,002,110	1960	37,010	707	4,022	110	733	42,582	1,044,692
451,246	8,383	36,463	3,244	20,250	519,586	Aver.	28,031	720	7,046	2,105	667	38,569	559,641

NOTE: Figures are based on Alaska Department of Fish and Game and U. S. Bureau of Commercial Fisheries final data, which DO NOT include fish caught in these areas and canned elsewhere, and accordingly are somewhat different from those in other tables compiled independently by PACIFIC FISHERMAN. Figures for the latest year shown are preliminary. "Average" figures are for last ten years. Bristol Bay totals and Grand totals include fish packed in Yukon-Kuskokwim district.

More than 65 years of reliable
service to Alaska's largest industry

**ALASKA
STEAMSHIP
COMPANY**

Since 1895



year average of 268,000.

Pinks, with 531,163 cases, had the benefit of the good year of the cycle, advancing far above the 162,000 cases of 1959, and narrowly edging the average of 521,000 cases.

Chums followed Pinks closely, the 361,567 cases being well above the 203,000 of 1959, and also above the 10-year average of 521,000. As a matter of fact, the Chum production of Southeast Alaska was all that saved the American yield of this species from virtual failure in 1960.

Cohoes with 54,064 cases provided the best pack of this species in Central Alaska since 1954, and represented the only substantial parcel of this grade to be packed anywhere on the American coast in 1960. The great reduction in abundance of Cohoes elsewhere was not manifest west of Prince William Sound.

Sole disappointing area in Central Alaska's 1960 salmon picture was Prince William Sound, which had been expected to repeat the excellent Pink salmon performance of 1958. Although there was a run, it was so far below expectations as to be counted a failure by those who had invested heavily in its prospect. With the strong cyclic tendency of this area continuing, and prospects for up-building from the run of 1959 poor, regulations currently provided for 1961 call for virtual closure of Prince William Sound, at least so far as Pinks are concerned, during the coming season.

● Western Alaska's great Bristol Bay Red salmon run is adequately discussed elsewhere in this report of 1960. It dominated all other considerations, producing a pack of 886,717 cases, compared with 361,000 cases the year before, the area average of 496,000 over a 10-year period, and a pack of 577,000 cases in the cycle year 1956, from which the great run of 1960 largely was derived.

There was disappointment—a little —but it was almost lost to sight in the Red glow which suffused the Western Alaska sky.

Pinks, running to the Nushagak, had been counted upon to come back in substantial volume after the surprise run which produced about 60,000 cases in 1958, when there was virtually no Pink gear available. Caught flat-footed in that year, the industry was well prepared in 1960, but the fish fooled them with that annoying eccentricity characteristic of Pink salmon. The regional pack was only 12,604 cases, perhaps half of what had been hoped.

● Prospects for Red salmon on Bristol Bay in 1961 are again encouraging, with the possibility that the pack may equal that of 1960.

This is in spite of the fact that the total run of Reds in 1961 is not expected to approach that of 1960 numerically.

Feeling of the industry that a comparable pack may be forthcoming is based on three considerations:

UNITED STATES CANNED SALMON PACK

YEAR	Red or Sockeye	Pink	Chum or Keta	Med. Red Coho or Silverside	King or Chinook	Steelhead	GRAND TOTAL	YEAR
1916	2,217,259	1,755,433	1,260,131	529,096	579,615	19,013	6,360,547	1916
1917	2,908,995	3,432,573	1,173,040	431,160	597,704	23,937	8,567,409	1917
1918	2,711,251	2,425,500	1,677,416	647,020	589,786	25,170	8,076,143	1918
1919	1,338,401	2,079,775	1,995,446	593,192	664,844	19,899	6,630,347	1919
1920	1,541,286	1,618,103	1,090,103	251,533	586,749	13,659	5,101,705	1920
1921	1,870,396	845,184	288,539	238,595	369,756	10,142	3,622,612	1921
1922	2,181,197	1,659,781	650,079	491,643	313,992	24,983	5,231,675	1922
1923	1,974,495	2,930,985	702,536	415,084	362,660	25,997	6,411,757	1923
1924	1,533,237	2,619,013	1,266,654	418,336	378,218	29,862	6,245,320	1924
1925	1,187,784	2,659,144	1,214,304	477,159	481,071	14,859	6,034,321	1925
1926	2,218,638	3,334,787	1,067,053	429,942	408,136	33,128	7,491,684	1926
1927	1,430,116	1,993,679	656,911	459,209	481,914	31,643	5,053,472	1927
1928	2,010,956	2,791,061	1,302,422	445,496	335,907	16,605	6,902,447	1928
1929	1,819,469	3,298,127	1,115,924	367,847	358,085	24,104	6,983,556	1929
1930	1,232,340	3,154,364	683,451	566,250	390,756	16,932	6,044,093	1930
1931	1,792,111	3,684,092	615,441	285,930	390,563	12,355	6,780,492	1931
1932	2,200,104	2,118,250	1,006,776	257,735	318,770	13,218	5,914,853	1932
1933	2,321,784	2,726,783	727,917	243,055	323,176	18,027	6,360,742	1933
1934	2,876,981	3,825,989	849,721	371,521	322,968	14,901	8,361,990	1934
1935	882,408	3,624,148	893,612	364,625	257,773	14,888	6,037,454	1935
1936	2,553,160	4,590,422	1,249,188	287,224	283,941	19,282	8,983,217	1936
1937	2,168,528	3,947,271	786,397	236,708	369,725	17,568	7,526,197	1937
1938	2,677,723	3,222,559	845,433	294,257	218,989	15,248	7,274,209	1938
1939	2,020,200	2,791,790	668,274	227,143	238,827	25,293	5,971,527	1939
1940	1,040,241	2,910,972	919,368	375,668	269,217	33,436	5,548,902	1940
1941	1,308,740	4,790,573	851,902	440,653	372,624	33,162	7,779,654	1941
1942	1,194,985	2,819,501	1,089,555	406,032	320,531	21,911	5,852,515	1942
1943	2,004,204	2,384,186	895,265	191,135	185,340	16,261	5,676,391	1943
1944	1,618,729	2,087,621	987,382	202,364	203,761	19,222	5,119,079	1944
1945	1,227,162	2,549,848	693,803	239,086	181,367	19,314	4,910,580	1945
1946	1,350,629	2,060,243	694,728	217,004	222,744	17,767	4,563,115	1946
1947	1,911,284	2,363,069	666,497	293,058	356,665	22,091	5,612,664	1947
1948	1,734,091	1,308,689	1,054,637	370,610	338,037	20,362	4,826,426	1948
1949	1,075,427	3,236,317	718,878	277,495	207,868	8,931	5,524,916	1949
1950	1,290,249	1,097,811	1,317,761	352,126	205,981	10,534	4,274,462	1950
1951	936,120	2,001,352	981,524	466,880	244,832	14,862	4,645,570	1951
1952	1,413,670	1,175,054	1,290,667	397,534	159,086	19,011	4,455,022	1952
1953	1,162,614	1,396,388	966,418	207,144	158,437	19,645	3,910,646	1953
1954	1,323,830	1,151,126	1,329,756	215,123	129,933	13,379	4,163,147	1954
1955	749,328	1,682,000	466,353	198,806	176,661	13,737	3,361,885	1955
1956	1,182,554	1,129,346	758,059	188,571	165,957	8,171	3,432,658	1956
1957	963,566	943,564	924,543	203,553	142,066	7,605	3,184,897	1957
1958	948,965	1,550,025	911,816	150,699	137,425	6,313	3,705,243	1958
1959	736,886	819,825	582,096	190,560	126,274	9,897	2,465,538	1959
1960	1,289,689	682,885	622,755	84,295	98,229	2,731	2,780,584	1960
10 Yr. Average	1,070,722	1,253,157	883,399	230,317	153,890	11,535	3,610,519	10 Yr. Average

NOTE: Figures represent full cases of 48 lbs. net. Figures for the last year shown are from PACIFIC FISHERMAN s compilation; those for previous years have been revised from official data. "Average" is for the last ten years.

PARKS CANNING CO., INC.

and

WESTERN FISHERIES COMPANY

Offices — 309 Colman Building
Seattle 4, Washington

Canneries — Kodiak and Cordova, Alaska

Products — Top Quality Alaska and
Copper River Salmon

Represented by

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PACKED with care for those who appreciate *quality!* Only the finest seafoods, taken from icy North Pacific waters, bear North Pacific's labels (listed below, right). A quality array of finer flavored, nutritious seafoods that mean *repeat* sales.

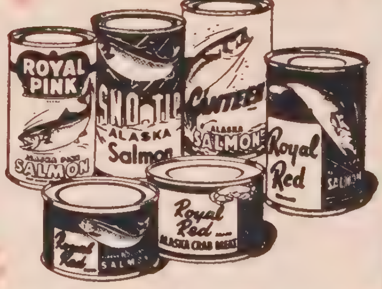
CANNED SALMON: Copper River Chinook and Sockeye; Alaska Reds, Cohoe, Pinks and Chums; Puget Sound and Columbia River Salmon. Packed 48, ½-lb. flats and 48, 1-lb. talls.

CANNED CRABMEAT: Fancy pack Dungeness and King varieties. Canned in 48, ½-lb. flats, 24, ½-lb. flats.

★

LABELS:

ROYAL RED—Red Sockeye
ROYAL RED—Red Chinook
ROYAL RED—Dungeness Crab
ROYAL RED—Razor Clams
ROYAL RED—North Pacific Shrimp
ROYAL PINK—Pink Salmon
SNO-TIP—Chum Salmon



North Pacific Seafoods

312 COLMAN BUILDING • SEATTLE 4, WASHINGTON
MUtual 2-1011 R. S. Ennis, Jr., Manager

1. The 1960 run was composed in large degree of four-year fish, which normally comprise only about 40% of the return in any year. Thus the five-year fish from the 1956 spawning are to be expected in 1961.

2. Average size of individual fish in 1961 almost certainly will exceed that of 1960, when the run was composed of very small Reds, due to the dominance of 4-year fish and the fact that in years of great abundance the size of individuals runs below normal.

3. The industry will be more adequately prepared to handle the run, with less likelihood that the catch will have to be curtailed because of inability of available men and plants to handle the fish.

● The wholesale value of Alaska's salmon pack in 1956 was $78,577,000. In 1959, the pack value had sagged to $49,493,000. Now in 1960 it was up again, this time to $78,500,000.

The Alaska Department of Fish and Game is striving to build up the fisheries to where these wide fluctuations will be replaced by a fishing industry stabilized by a program of maximum sustained yield.

●

SALMON
Alaska

● Prodigious run of Red salmon to Bristol Bay in 1960 produced a catch of approximately 13.5 million fish, of which almost 10 million were taken in the Naknek-Kvichak area.

Along with this excellent catch went an escapement of about 25 million fish, of which approximately 15 million went to the Kvichak River proper,

NORTH AMERICAN CANNED SALMON PACK

Year	Red, Sockeye or Blueback	Pink	Chum or Keta	Medium Red Coho or Silverside	King or Chinook	Steelhead Trout	Total Cases	Year
1898	1,594,162	109,399	51,530	282,589	398,564	26,277	2,462,521	1898
1899	2,153,388	401,892	61,932	261,071	334,974	11,994	3,225,251	1899
1900	2,046,908	232,022	155,208	208,026	338,493	20,597	3,001,254	1900
1901	3,801,730	585,017	86,230	126,535	455,395	20,000	5,074,907	1901
1902	2,702,045	549,602	313,603	227,031	379,641	8,593	4,180,515	1902
1903	2,231,555	564,507	61,232	330,319	403,836	7,251	3,598,700	1903
1904	1,950,949	299,333	168,235	168,235	444,472	9,868	3,041,092	1904
1905	3,488,322	253,559	138,642	269,806	443,794	9,822	4,603,945	1905
1906	2,122,204	416,602	450,151	397,346	424,974	6,500	3,817,777	1906
1907	1,707,813	1,114,100	272,135	397,786	354,209	6,604	3,852,647	1907
1908	2,186,325	726,656	303,837	386,745	379,171	11,863	3,994,597	1908
1909	3,671,555	882,410	218,987	373,567	262,554	17,382	5,426,455	1909
1910	2,274,780	589,043	555,908	521,966	372,901	5,576	4,320,174	1910
1911	1,869,927	2,373,595	592,790	676,141	627,714	8,618	6,104,887	1911
1912	2,544,435	1,556,128	808,630	621,817	426,338	7,198	5,956,953	1912
1913	4,643,425	2,392,166	432,812	300,033	285,472	9,539	8,063,447	1913
1914	3,121,964	1,222,013	1,200,433	579,980	509,100	11,292	6,644,782	1914
1915	2,492,865	2,825,570	1,107,707	551,821	641,979	29,650	7,639,592	1915
1916	2,432,048	2,036,077	1,500,332	715,815	646,341	24,999	7,355,612	1916
1917	3,248,843	3,929,332	1,648,313	588,749	673,980	35,677	10,124,894	1917
1918	2,987,710	2,953,245	2,175,031	838,088	697,140	41,086	9,692,300	1918
1919	1,707,846	2,426,414	2,367,481	793,175	704,195	24,392	8,023,503	1919
1920	1,892,691	2,138,959	1,175,001	361,566	705,050	16,054	6,289,321	1920
1921	2,034,310	1,038,090	359,947	362,943	419,508	11,362	4,226,160	1921
1922	2,480,811	2,241,760	908,283	510,919	353,588	26,640	6,522,001	1922
1923	2,309,142	3,371,917	1,120,591	534,225	389,802	27,757	7,753,434	1923
1924	1,902,832	3,295,739	1,835,251	542,682	406,096	31,270	7,990,543	1924
1925	1,581,792	3,111,320	1,803,371	667,817	550,071	17,248	7,731,610	1925
1926	2,550,771	4,101,422	1,762,134	607,778	485,783	86,233	9,544,126	1926
1927	1,738,054	2,241,304	1,217,338	642,522	538,574	33,377	6,411,169	1927
1928	2,214,498	3,583,433	2,165,652	602,203	354,798	17,492	8,938,076	1928
1929	2,100,787	3,775,764	1,541,213	564,826	375,497	24,821	8,382,908	1929
1930	1,710,018	4,266,301	1,085,351	758,451	427,282	18,509	8,265,912	1930
1931	2,084,385	3,890,755	671,574	388,140	418,483	13,679	7,467,016	1931
1932	2,484,459	2,341,966	1,313,537	446,706	394,830	14,386	6,995,884	1932
1933	2,579,891	3,259,341	1,021,547	402,107	343,442	19,486	7,625,814	1933
1934	3,354,863	4,261,262	1,362,905	596,951	352,752	16,183	9,944,916	1934
1935	1,232,852	4,139,114	1,303,216	596,117	279,693	15,484	7,566,476	1935
1936	2,968,184	5,181,954	1,846,675	533,285	313,795	20,350	10,864,243	1936
1937	2,494,302	4,532,487	1,233,999	369,916	385,986	18,412	9,035,372	1937
1938	3,125,176	3,623,435	1,387,245	595,380	234,520	16,283	8,982,039	1938
1939	2,280,088	3,412,392	1,054,858	472,239	254,930	26,090	7,500,597	1939
1940	1,402,999	3,124,292	1,553,389	592,395	286,485	34,443	6,994,003	1940
1941	1,763,852	5,218,427	1,770,225	831,279	422,989	36,597	10,043,369	1941
1942	1,860,044	3,088,724	1,723,193	616,687	343,369	26,507	7,658,524	1942
1943	2,169,091	2,913,760	1,258,239	377,160	196,000	19,357	6,933,608	1943
1944	1,869,365	2,478,750	1,239,548	383,040	223,088	23,143	6,216,934	1944
1945	1,556,200	3,374,192	1,041,387	457,680	194,056	22,125	6,645,640	1945
1946	1,893,469	2,176,817	1,267,478	316,968	230,811	21,880	5,907,423	1946
1947	2,197,569	2,962,281	1,127,496	438,087	366,620	25,325	7,117,378	1947
1948	1,994,733	1,630,411	1,551,190	577,726	354,475	26,027	6,134,562	1948
1949	1,335,248	3,946,309	946,615	492,871	229,031	11,305	6,961,380	1949
1950	1,698,290	1,544,327	1,816,745	468,768	215,114	13,777	5,757,022	1950
1951	1,364,419	2,737,445	1,443,330	779,725	258,530	18,517	6,601,966	1951
1952	1,862,844	1,850,890	1,375,214	461,629	168,150	22,763	5,741,490	1952
1953	1,672,714	2,189,770	1,359,134	317,314	170,614	22,369	5,731,915	1953
1954	2,004,548	1,486,676	1,910,330	343,203	144,013	17,113	5,905,883	1954
1955	994,186	2,505,415	591,190	394,529	194,414	15,327	4,695,061	1955
1956	1,502,650	1,492,979	961,769	406,486	177,628	9,425	4,550,937	1956
1957	1,192,018	1,695,172	1,164,082	421,468	152,547	8,730	4,634,017	1957
1958	2,028,120	2,005,543	1,141,108	283,102	147,900	7,526	5,613,299	1958
1959	993,056	1,278,421	715,224	403,666	141,505	10,763	3,542,635	1959
1960	1,516,594	902,509	709,555	176,642	104,142	3,231	3,412,673	1960
10 Yr. Average	1,513,115	1,814,482	1,137,094	398,776	165,944	13,576	5,042,988	10 Yr. Average

NOTE: Figures represent full cases of 48 lbs. net. "Average" is for the last ten years.

Figures for the last year shown are from PACIFIC FISHERMAN's compilation; those for previous years are official totals.

Since 1895

KELLEY-CLARKE COMPANY

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SELLING AGENTS

CANNED SALMON

NORTHWEST TUNA

DUNGENESS CRABMEAT

KELLEY-CLARKE
ESTAB. 1895
COMPANY

PACIFIC SHRIMP

ALASKA KING CRABMEAT

SALMON
Alaska

1960 -WESTERN ALASKA CANNED SALMON PACK

COMPANY	CANNERY LOCATION	RED			PINK	CHUM	COHO	KING or CHINOOK			GRAND TOTAL (full cases)
		1-lb. Talls (etc.)	½-lb. Flats (8 doz.)	Total (full cases)	1-lb. Talls (etc.)	1-lb. Talls (etc.)	1-lb. Talls (etc.)	1-lb. Talls	½-lb. Flats (8 doz.)	Total (full cases)	
Alaska Packers Association	Naknek, Nushagak, Egegik, Ugashik	218,602	11,909	230,511	1,709	21,219	555	3,395	162	3,557	257,551
Aleutian Development Co., Inc.	Unalaska	---	---	---	330	---	---	---	---	---	330
Arctic Maid Fisheries	Bristol Bay	24,020	903	24,923	73	2,324	---	115	2	117	27,437
American Packing Co.	Naknek, Port Moller	1,365	51,255	52,620	142	1,637	---	7	179	186	54,585
Bogler, Henry	Yukon River	---	---	---	---	---	---	857	---	857	857
Columbia River Packers Assn.	Bristol Bay	51,055	4,245	55,300	427	8,411	139	949	58	1,007	65,284
Columbia Wards Cove	Ekuk	25,822	---	25,822	1,692	7,678	549	2,665	---	2,665	38,406
	Egegik	24,506	---	24,506	---	1,407	---	90	---	90	26,003
	Naknek-Kvichak	62,313	6,202	68,515	---	4,274	---	165	85	250	73,039
Egegik Packing Co.	Egegik	11,238	12,686	23,924	---	1,065	---	169	---	169	25,158
P. E. Harris Co., Inc.	Port Moller	3,080	---	3,080	13	275	5	13	---	13	3,386
	Pedersen Point	796	---	796	---	1	---	1	---	1	798
	Egegik	25,862	1,701	27,563	---	1,536	---	159	---	159	29,258
Intercoastal Packing Co.	Bristol Bay	10,742	651	11,393	---	469	---	50	---	50	11,912
Island Seafood, Inc.	Togiak	---	5,766	5,766	69	8,602	6	---	628	628	15,071
Kayak Packing Co.	Bristol Bay	4,741	---	4,741	---	345	---	---	235	235	5,321
Malaspina Fisheries, Inc.	Bristol Bay	4,447	243	4,690	---	287	---	11	3	14	4,991
Mormac Corporation	Bristol Bay	1,095	---	1,095	57	37	30	21	---	21	1,240
Nakat Packing Corp.	Nakeen	42,072	7,310	49,382	---	6,700	---	265	57	322	56,404
Naknek Independent Pkg. Co.	Naknek	6,327	---	6,327	---	621	---	58	---	58	7,006
New England Fish Co.	Bristol Bay	55,837	---	55,837	1,459	8,970	138	2,540	---	2,540	68,944
Northern Commercial Co.	Kwiguk	---	---	---	---	---	---	---	2,836	2,836	2,836
Pacific American Fisheries	Port Moller	16,851	14,696	31,547	85	3,691	2,386	641	69	710	38,419
	Dillingham, Naknek	55,824	---	55,824	1,457	8,969	138	2,540	---	2,540	68,928
Pacific Reefer Fisheries, Inc.	Floater "M/V Pacific Reefer"	14,500	---	14,500		200	---	---	---	---	14,700
Queen Fisheries, Inc.	Bristol Bay	15,134	22,126	37,260	4,417	7,920	1,273	2,925	305	3,230	54,100
Red Salmon Company	Bristol Bay	51,055	4,245	55,300	427	8,410	139	949	58	1,007	65,283
Yukon Packers	St. Marys	---	---	---	---	---	---	---	2,506	2,506	2,506
Yukon Riv. Fishermen Co-op	Alakanuk	---	---	---	---	---	---	---	7,107	7,107	7,107
Miscellaneous		15,556	---	15,556	247	1,808	---	222	---	222	17,832
TOTALS		742,839	143,938	886,777	12,604	106,856	5,358	18,807	14,290	33,097	1,044,692

and something more than 2 million to the Naknek and Alagnak Rivers, usually bracketed with it in the Naknek-Kvichak area.

There were several reasons for the exceptionally heavy escapement on Bristol Bay in 1960. One of these was the small size of the fish, which during much of the season required above 14.5 fish per case; and during the late season, when 4½″ Pink salmon nets became legal, the per-case requirement in canneries accepting fish from such nets ran well above 20.

Obviously, with such small fish, a great many escaped which might otherwise have been caught; and happily the proportion of females in the escapement was very large.

- As the 1960 run was made-up in large degree of four-year fish; and as about 60% of the Bristol Bay Red salmon usually are five-year fish, the outlook for 1961 would appear to be excellent, and so it is—although scientists rate the prospect for 1961 somewhat lower than might at first be anticipated.

At the end of 1960 scientists of the Alaska Department of Fisheries, the Fisheries Research Institute (which forecast the 1960 run with uncanny accuracy), and the U. S. Bureau of Commercial Fisheries forecast a gross

Weekly Red Salmon Packs on Bristol Bay

YEAR	FIRST WEEK		SECOND WEEK		THIRD WEEK		FOURTH WEEK		TO CLOSE	TOTAL	YEAR
1940	(July 6)	221,687	(July 13)	139,853	(July 20)	33,848	(July 28)	4,606	. .	399,994	1940
1941	(July 5)	204,929	(July 12)	206,049	(July 19)	127,573	(July 28)	31,316	. .	569,867	1941
1942	(July 4)	149,175	(July 11)	142,145	(July 18)	93,174	(July 25)	44,323	7,357	436,174	1942
1943	(July 3)	284,635	(July 10)	449,076	(July 17)	272,074	(July 24)	242,122	27,174	1,275,081	1943
1944	(July 8)	431,421	(July 15)	347,149	(July 22)	116,514	(July 29)	18,045		944,129	1944
1945	(July 7)	236,413	(July 14)	233,332	(July 21)	84,681	(July 28)	15,405	. . .	569,831	1945
1946	(July 6)	241,948	(July 13)	241,405	(July 20)	88,520	(July 27)	30,831	. . .	602,704	1946
1947	(July 5)	641,401	(July 12)	376,575	(July 19)	242,854	(July 26)	70,975	3,226	1,335,031	1947
1948	(July 3)	482,252	(July 10)	464,488	(July 17)	169,806	(July 24)	112,111	7,680	1,236,226	1948
1949	(July 2)	260,145	(July 9)	142,637	(July 16)	86,865	(July 23)	30,675	3,581	523,903	1949
1950	(July 1)	93,006	(July 8)	370,340	(July 15)	89,070	(July 22)	10,832	411	563,659	1950
1951	(June 30)	59,185	(July 7)	127,553	(July 14)	73,692	(July 21)	59,143	. . .	319,573	1951
1952	(June 28)	92,073	(July 5)	228,069	(July 12)	256,014	(July 19)	119,729	21,618	712,503	1952
1953	(June 27)	63,478	(July 4)	191,378	(July 11)	127,590	(July 18)	51,229	9,382	443,057	1953
1954	(July 3)	116,428	(July 10)	97,034	(July 17)	75,381	(July 24)	17,230	1,396	307,469	1954
1955	(July 2)	73,936	(July 9)	142,358	(July 16)	86,500	(July 23)	8,469	2,369	313,632	1955
1956	(June 30)	32,826	(July 7)	121,942	(July 14)	266,146	(July 21)	103,065	7,121	531,100	1956
1957	(June 29)	57,403	(July 6)	134,668	(July 13)	223,727	(July 20)	40,512	7,996	464,306	1957
1958	(June 29)	47,190	(July 6)	168,587	(July 20)	38,942	(July 20)	46,076	15,668	316,463	1958
1959	(June 28)	10,960	(July 5)	89,309	(July 12)	120,755	(July 19)	87,096	23,843	331,963	1959
1960	(June 26)	19,472	(July 3)	183,274	(July 10)	357,085	(July 17)	247,506	45,308	852,645	1960

Compiled from U.S. Fish & Wildlife Service preliminary statistics, and include only salmon canned in that area.

Figures in first column of table are for the total pack (in full cases of 48 lbs. net) to dates shown: those following show weekly packs.

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run of 22 million Red salmon maturing in 1961 to return to Bristol Bay.

Several points should be borne in mind in interpreting this forecast:

1. The figure of 22 million includes (a) mature Red salmon of North American origin which will be taken on the high seas by the Japanese operations of 1961; (b) the escapement of salmon required to seed the spawning grounds, a number which has been revised upward since the success in 1960 of the heavy spawning of 1956; (c) the allowable catch to be taken by American fishermen.

2. The individual fish should be somewhat larger than in 1960, as a greater percentage of the run should be composed of 5-year fish.

3. The late-1960 forecast necessarily is preliminary, and will be subject to further evidence before the operating season on the basis of high seas fishing for scientific sampling and tagging purposes in the late spring. In the event this information is more favorable or adverse than originally expected, the Alaska Department of Fish and Game's authority is sufficiently flexible to provide changes which may be suggested on the basis of such later data.

Pack of Alaska Canned Salmon by Species and Values

Salmon fishing in Alaska commenced in 1878, but no segregation of the packs by species is available prior to 1896, while the valuations were not recorded prior to 1905. Earlier total packs, starting with 8,159 cases in 1878, ranged from 6,539 cases in 1880 to a peak of 801,400 in 1891, the output in 1895 being 626,530 cases. The average from the beginning through 1895 was 291,973 cases.

Values are based on opening prices, or on prices at which the bulk of the packs were sold.

YEAR	RED, SOCKEYE		PINK		CHUM		COHO		KING		TOTAL		YEAR
	Cases	Value	Cases	Value	Cases	Value	Cases	Value	Cases	Value	Cases	Value	
1896	806,010	...	111,986	...	452	...	37,017	...	11,242	...	966,707	...	1896
1897	688,581	...	157,711	...	1,396	...	43,557	...	17,833	...	909,070	...	1897
1898	782,941	...	109,399	...	5,184	...	54,711	...	12,862	...	965,997	..	1898
1899	864,254	...	149,159	...	1,931	...	39,402	...	23,400	...	1,078,146	...	1899
1900	1,197,406	...	232,022	...	30,012	...	50,984	...	37,715	...	1,548,139	...	1900
1901	1,319,335	...	541,427	...	47,464	...	65,509	...	43,069	...	2,016,804	...	1901
1902	1,685,546	...	549,602	...	159,849	...	82,723	...	59,104	...	2,536,824	...	1902
1903	1,687,244	...	355,799	...	35,052	...	120,506	...	47,609	...	2,246,210	...	1903
1904	1,505,548	...	299,333	...	21,178	...	85,741	...	41,956	...	1,953,756	...	1904
1905	1,574,428	$5,335,547	168,579	$498,194	41,972	$113,056	67,394	$215,875	42,125	$141,999	1,894,516	$6,304,671	1905
1906	1,475,961	5,620,875	348,875	1,046,951	254,812	730,235	109,141	382,109	30,834	116,222	2,219,044	7,896,392	1906
1907	1,295,113	5,915,227	561,973	1,799,290	184,173	547,757	85,190	337,384	43,424	181,718	2,169,873	8,781,366	1907
1908	1,651,770	7,524,251	644,133	1,733,379	218,513	554,197	68,827	274,089	23,730	99,867	2,606,973	10,185,783	1908
1909	1,705,302	7,610,550	464,873	1,114,839	120,712	274,110	56,556	231,029	48,034	207,624	2,305,477	9,438,151	1909
1910	1,450,267	7,774,390	554,322	1,764,055	254,218	773,409	114,026	559,666	40,221	214,802	2,413,054	11,086,322	1910
1911	1,320,705	8,552,512	1,021,356	4,493,966	303,823	1,215,692	120,704	752,283	45,378	363,024	2,820,966	16,198,833	1911
1912	1,904,258	10,776,987	1,303,365	3,410,928	638,528	1,600,444	170,384	791,023	52,594	310,847	4,060,129	16,890,229	1912
1913	1,964,379	9,136,616	1,402,916	3,687,446	267,654	623,424	77,377	271,078	34,167	140,914	3,746,914	13,859,478	1913
1914	2,201,574	12,482,110	997,823	3,600,075	662,478	2,260,614	157,792	735,219	48,165	281,924	4,067,832	19,719,942	1914
1915	1,922,296	11,907,202	1,870,373	5,619,436	484,408	1,356,469	126,570	588,903	85,694	458,000	4,489,341	19,930,010	1915
1916	2,119,442	13,147,994	1,753,546	6,446,168	715,238	2,434,627	265,184	1,430,143	66,179	364,496	4,919,589	23,823,428	1916
1917	2,484,881	29,058,778	2,298,466	15,120,419	877,713	5,375,713	193,708	1,634,600	67,552	660,868	5,922,320	51,850,017	1917
1918	2,618,559	25,313,837	2,418,212	16,142,604	1,366,859	8,756,598	216,572	2,068,784	57,367	596,000	6,677,569	52,877,823	1918
1919	1,265,543	17,143,017	1,657,434	14,982,542	1,348,462	9,450,772	230,229	2,809,310	90,533	1,131,662	4,592,201	45,552,714	1919
1920	1,475,780	19,851,816	1,613,434	9,751,845	1,022,708	4,712,575	192,311	1,579,963	91,276	1,154,013	4,395,509	37,050,212	1920
1921	1,758,794	16,539,177	440,471	1,938,263	247,606	990,424	109,783	649,480	48,319	352,699	2,604,699	20,470,043	1921
1922	2,075,397	19,719,158	1,657,556	7,709,011	562,496	2,369,396	174,312	949,312	31,604	258,799	4,501,428	31,006,027	1922
1923	1,878,330	17,727,572	2,455,136	12,337,580	527,145	2,542,759	163,752	957,439	38,977	344,078	5,063,340	33,909,428	1923
1924	1,449,724	14,840,946	2,613,068	13,191,793	1,027,183	4,931,172	182,207	1,312,969	33,741	304,809	5,305,923	34,581,689	1924
1925	1,065,290	15,243,243	2,105,240	11,473,271	1,065,395	4,701,847	164,199	1,702,243	50,774	682,235	4,450,898	33,802,839	1925
1926	2,157,087	21,328,739	3,338,349	17,987,527	902,443	4,518,929	202,527	1,700,563	52,476	544,247	6,652,882	46,080,005	1926
1927	1,320,563	16,880,670	1,414,756	8,638,551	507,641	2,761,638	252,629	2,307,569	70,438	853,100	3,566,072	31,441,534	1927
1928	1,944,061	18,902,050	2,785,464	18,512,649	991,504	564,567	297,886	2,140,685	51,195	505,017	6,070,110	45,624,968	1928
1929	1,693,050	19,388,299	2,570,506	15,551,647	860,876	4,659,754	172,070	1,302,887	73,740	769,869	5,370,242	41,672,456	1929
1930	848,787	11,172,954	3,150,652	12,773,894	596,000	2,162,306	329,988	3,011,505	63,560	764,254	4,988,987	29,884,813	1930
1931	1,695,782	16,161,532	2,978,512	10,226,769	536,909	1,726,203	170,208	1,119,332	51,124	462,800	5,432,535	29,696,636	1931
1932	2,104,727	10,803,982	2,116,573	6,368,695	821,128	2,301,408	149,351	606,798	68,709	368,522	5,260,488	20,449,405	1932
1933	2,182,371	14,649,771	2,183,443	10,498,358	658,245	3,028,584	161,633	884,276	41,006	345,310	5,226,698	29,406,294	1933
1934	2,626,002	17,687,617	3,822,602	15,349,445	735,055	2,651,538	235,560	1,197,000	51,367	155,230	7,470,586	37,040,830	1934
1935	823,175	7,216,754	3,254,528	13,767,517	852,730	3,414,160	188,918	1,263,479	36,475	348,024	5,155,826	26,009,934	1935
1936	2,482,555	19,648,482	4,589,270	18,430,508	1,106,983	4,094,532	218,232	1,453,566	57,908	452,125	8,454,948	44,079,213	1936
1937	2,101,154	21,590,206	3,619,298	18,151,343	729,114	3,507,933	135,078	1,096,905	69,394	682,031	6,654,038	45,028,418	1937
1938	2,523,123	19,663,910	3,222,104	12,350,571	786,859	2,848.266	216,732	1,342,715	42,726	341,788	6,791,544	36,547,250	1938
1939	1,971,338	18,560,539	2,509,519	12,656,697	626,412	2,905,286	103,156	708,013	28,036	280,036	5,239,211	35,110,571	1939
1940	953,381	9,402,841	2,908,025	15,770,772	860,539	4,312,766	284,130	2,122,330	22,303	219,742	5,028,378	31,828,451	1940
1941	1,164,888	15,952,391	4,636,649	32,593,271	710,507	4,844,060	356,213	3,595,982	38,246	480,998	6,906,503	57,466,702	1941
1942	912,006	13,804,764	2,818,650	22,565,374	942,789	7,178,696	372,537	4,442,108	43,127	686,567	5,089,109	48,677,509	1942
1943	1,982,175	30,381,755	2,322,057	18,701,467	882,578	6,755,829	158,734	1,937,981	50,965	802,162	5,396,509	58,579,194	1943
1944	1,580,757	24,254,327	2,087,322	16,924,966	985,725	7,565,526	187,053	2,278,938	36,939	584,787	4,877,796	51,608,544	1944
1945	1,173,356	18,260,328	2,239,282	18,201,352	688,485	5,312,578	195,860	2,078,066	41,709	676,640	4,338,692	44,528,964	1945
1946	1,065,898	22,880,873	2,057,121	24,685,452	617,155	7,120,923	193,061	3,231,992	37,874	748,321	3,971,109	58,667,561	1946
1947	1,876,239	45,390,823	1,723,617	32,269,419	500,211	8,983,297	148,715	3,522,434	53,684	1,131,912	4,302,466	91,297,885	1947
1948	1,635,463	44,994,233	1,304,044	31,617,066	774,661	16,345,475	241,799	6,278,595	54,645	1,459,245	4,010,612	100,694,614	1948
1949	967,626	25,504,967	2,682,330	42,921,708	499,226	7,572,386	192,352	4,004,944	50,007	1,258,463	4,391,541	81,262,468	1949
1950	1,166,052	34,211,966	1,095,534	25,663,330	780,684	15,269,095	191,501	5,131,834	54,321	1,550,183	3,288,092	81,826,408	1950
1951	816,831	26,017,227	1,559,748	32,505,086	721,152	10,950,656	345,159	5,131,859	91,425	2,596,635	3,534,315	77,201,463	1951
1952	1,181,162	33,783,498	1,172,168	21,705,200	966,660	15,140,209	197,004	4,201,837	56,970	1,521,732	3,573,964	76,352,476	1952
1953	994,293	27,996,373	955,528	17,439,908	800,882	11,214,236	127,676	2,894,714	56,222	1,442,103	2,934,601	60,987,334	1953
1954	804,194	23,235,032	1,149,422	22,477,095	1,029,295	15,093,798	171,643	3,926,204	52,600	1,407,488	3,207,154	66,139,617	1954
1955	661,607	21,045,719	1,270,303	27,044,751	363,657	6,322,832	114,584	3,056,498	47,818	1,369,984	2,457,969	58,839,784	1955
1956	1,015,558	34,912,265	1,116,769	24,927,897	675,034	12,873,940	95,940	2,763,127	47,053	1,471,651	2,950,354	76,948,880	1956
1957	763,030	26,694,705	713,774	16,600,404	829,816	15,344,031	87,290	2,391,960	47,984	1,533,286	2,441,894	62,564,386	1957
1958	488,354	16.489.687	1.547.651	32,129,387	754,806	12,685,328	101,991	2,686,153	51,778	1,540,728	2,944,580	65,531,283	1958
1959	584,503	21,419,766	634,945	15,002,039	415,326	8,498,434	98,298	3,039,412	45,267	1,534,259	1,778,339	49,493,910	1959
1960	1,171,635	42,358,824	680,695	18,386,676	577,523	14,777,416	76,024	2,360,864	44,150	1,410,784	2,550,027	79,294,564	1960
Aver.	848,117	27,395,310	1,080,100	22,821,844	713,416	12,891,088	141,561	3,245,262	54,127	1,582,865	2,837,321	67,335,369	Aver.

NOTE: Figures for the last year shown are Pacific Fisherman's own compilation from original sources. Figures for previous years are from official Fish & Wildlife Service data, to which have been added fish canned elsewhere from fish caught and frozen in Alaska. "Average" is for the last ten years.

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PACK OF ALASKA CANNED SALMON BY DISTRICTS

Year	Plants Oper.	SOUTHEAST ALASKA						CENTRAL ALASKA							WESTERN ALASKA							Plants Oper.	TOTAL CASES	Year
		Red	Pink	Chum	Coho	King	Total Cases	Plants Oper.	Red	Pink	Chum	Coho	King	Total Cases	Plants Oper.	Red	Pink	Chum	Coho	King	Total Cases			
1905	13	207,375	142,008	37,685	41,079	5,460	433,607	9	345,575	3,235	...	16,518	6,427	371,755	25	1,021,478	23,354	4,287	9,797	30,238	1,089,154	47	1,894,516	1905
1906	20	250,567	326,713	131,405	84,149	2,396	795,230	8	451,659	3,188	...	10,316	7,861	473,024	19	798,504	19,866	123,407	16,278	20,680	978,735	47	2,246,989	1906
1907	22	177.149	542,268	140,392	58,632	1,289	919,730	8	482,968	10,255	...	15,258	14,355	522,836	18	657,687	18,244	44,025	11,784	27,794	759,534	48	2,202,100	1907
1908	23	198,366	592,638	180,204	48,963	2,552	1,022,723	8	377,101	30,661	...	11,543	6,416	425,721	19	1,087,211	20,834	38,309	8,426	14,824	1,169,604	50	2,618,048	1908
1909	19	280,542	455,999	83,001	39,920	857	860,319	8	358,285	5,581	...	10,275	16,913	391,054	18	1,074,667	3,293	37,711	6,361	30,264	1,152,296	45	2,403,669	1909
1910	23	282,265	494,363	231,735	82,620	402	1,091,385	10	364,875	31,797	131	19.928	15,786	432,517	19	825,447	31,348	22,352	11,641	24,087	914,138	52	2,438,777	1910
1911	32	238.895	969.866	290,843	100,793	1,441	1,601,838	11	412,647	24,143	2,008	17,326	15,862	471,986	21	669,163	27,347	10,969	11,585	28,075	747,139	64	2,820,963	1911
1912	51	254,851	1,053,847	589,578	134,914	6,607	2,039,777	14	422,347	136,891	29,591	19,782	14,198	622,809	22	1,227,060	114,247	19,359	15,088	21,789	1,397,543	87	4,060,129	1912
1913	42	190,685	1,299,400	254,689	58,071	1,006	1,803,851	14	364,253	49,299	5,038	13,284	15,393	447,267	23	1,419,381	54,217	7,927	6,022	11,768	1,505,315	79	3,756,433	1913
1914	45	294,842	872,504	597.435	112,163	12,087	1,889,031	14	395,110	195,830	17,693	36,739	11,132	656,504	23	1,511,622	29,489	47,350	8,890	24,946	1,622,297	82	4,167,832	1914
1915	46	229.709	1,820,171	375,260	90,161	25,135	2,540,436	17	500,000	43,951	39,404	26,062	22,978	632,395	23	1,192,248	6,251	69,744	10,347	37,581	1,316,171	86	4,489,002	1915
1916	54	182,075	1,335,291	505,405	182,405	18,482	2,223,658	19	572,096	371,845	64,320	55,298	22,160	1,085,719	27	1,365,271	46,410	145,513	27,481	25,537	1,610,212	100	4,919,589	1916
1917	60	202,951	2,149,075	750,187	152,538	29,657	3,284,408	26	725,925	137,955	86,764	36,065	19,236	1,005,945	29	1,556,005	11,436	40,762	5,105	18,659	1,631,967	113	5,922,320	1917
1918	75	226,108	2,034,997	954,498	152,689	17,248	3,385,540	29	662,829	358,491	313,196	47,904	21,818	1,404,238	30	1,729,622	24,724	98,965	15,979	18,301	1,887,591	134	6,677,369	1918
1919	75	240,208	1,521,897	1,146,943	169,300	30,016	3,108,364	30	437,341	107,924	163,530	54.596	12,075	775,466	28	526,794	27,613	37,989	6,242	109,642	707,280	133	4,591,110	1919
1920	80	199,829	1,026,862	830,538	112,178	32,869	2,202,276	35	533,122	510,350	148,122	67,744	20,417	1,279,755	28	742,829	76,222	44,048	12,389	37,990	913,478	143	4,395,509	1920
1921	30	105,084	416.958	182,272	90,845	9,034	804,193	27	596,200	13,116	28,305	11,425	10,225	659,271	27	1,057,510	10,397	37,029	7,513	29,060	1,141,509	84	2,604,973	1921
1922	57	121.652	1,313.280	425,947	128,023	5,777	1,994,679	36	567,576	331,005	88,321	36,623	8,930	1,032,455	28	1,386,169	13,261	48,228	9,666	16,897	1,474,221	121	4,501,355	1922
1923	67	178,962	2,257,768	434.490	129,990	12,857	3,014,067	39	441,774	197,291	72,821	32,940	11,537	756,363	30	1,257,594	77	19,834	822	14,583	1,292,910	136	5,063,340	1923
1924	65	192.806	1,686 884	799,215	110,002	8,259	2,797,166	38	442,876	892,667	192,901	68.883	10,593	1,607,920	31	814,042	33,517	35,067	2,322	14,889	899,837	134	5,305.923	1924
1925	62	151,140	1,701.849	835,599	94.539	12,493	2,795,611	37	364,721	402,801	199,797	68,267	19,289	1,054,875	30	549,429	590	29,999	1,393	18,992	600,403	129	4,450,898	1925
1926	61	173,891	2,158,699	618,397	96,389	10,679	3,058,055	43	630,505	1,144,180	243,808	104,309	23,683	2,146.485	28	1,352,691	35,470	40,238	1,829	18.114	1,448,342	132	6,652,882	1926
1927	62	115,664	581,728	224,696	114,331	9,131	1,045,823	47	320,159	833,028	253,410	138,243	42,948	1,587,788	29	884,740	...	29,262	55	18,404	932,461	138	3,566,072	1927
1928	60	106,793	2,137,796	566,689	145,323	5,596	2,962,197	62	431,924	643,816	378,499	152,066	32,567	1,638,872	29	1,405,344	3,852	46,316	497	13,032	1,469,041	151	6,070,110	1928
1929	59	161,580	1,541,463	290,742	97,850	6,982	2,098,617	70	455,997	1,028,790	498,873	68,538	36,526	2,088,544	30	1,075,473	253	71,261	5,862	30,232	1,183,081	159	5,370,242	1929
1930	57	216,743	2,296,270	283,553	155,844	10,894	2,963,304	68	270,310	839,751	281,111	170,741	32,123	1,594,036	27	361,734	14,631	31,336	3,403	20,543	431,647	152	4,988,987	1930
1931	41	148,485	2,038,388	277,225	88,841	14,926	2,567,865	49	439,572	940,124	193,131	81,275	27,567	1,681,669	25	1,107,725	...	66,553	92	8,631	1,183,001	115	5,432,535	1931
1932	31	140.356	1,380,093	582,290	88,293	23,637	2,214,669	34	659,539	720,893	145,660	60,363	32,317	1,618,772	22	1,304,832	15,587	93,178	695	12,755	1,427,047	87	5,260,488	1932
1933	38	81,122	1,477,608	425,869	95,629	8,130	2,088,358	31	486,528	703,696	207,363	64,548	23,792	1,485,927	23	1,614,721	2,139	25,013	1,456	9,084	1,652,413	92	5.226.698	1933
1934	47	104,413	2,622,186	393,904	159,509	15,606	3,295,618	45	707,754	1,198,457	307,649	74,832	27,005	2,315,697	22	1,813,835	1,959	33,502	1,219	8,756	1,859,271	114	7,470,586	1934
1935	46	159,506	2,209,373	541,152	141,501	11,496	3,063,028	44	391,088	1,045,155	302,011	47,198	24,338	1,809,790	9	272,581	...	9,567	219	641	283,008	99	5,155,826	1935
1936	46	219,531	2,959,774	784,455	136,043	22,105	4,121,908	46	839,243	1,598,585	295,956	80,608	31,820	2,846,212	24	1,423,781	30,911	26,572	1,581	3,983	1,486,828	116	8,454,948	1936
1937	45	165,170	2.138,264	503,235	86,912	30,613	2,924,194	47	459,399	1,480,658	190,425	42,028	31,234	2,209,744	24	1,476,585	376	35,454	138	7,547	1,520,100	116	6,654,038	1937
1938	39	189,880	1,886,104	473,619	140,791	16,339	2,706,733	42	484,518	1,336,000	253,905	75,596	20,146	2,170,165	17	1,848,725	...	59,335	345	6,241	1,914,646	98	6,791,544	1938
1939	48	195,907	1,474,269	293,316	65,906	2,364	2,031,762	47	657,198	1,034,623	237,148	37,250	21,023	1,987,242	24	1,118,233	627	95,948	...	5,399	1,220,207	119	5,239,211	1939
1940	46	125,462	1,452,037	484,476	155,577	1,539	2,219,091	42	384,266	1,441,266	343,072	126,878	18,359	2,314,475	11	443,653	14,088	32,991	1,675	2,405	494,812	99	5,028,378	1940
1941	47	137,861	3,631,491	321,118	193,751	1,812	4,286,033	44	413,658	1,005,029	333,618	159,023	30,825	1,942,153	19	613,369	129	55,771	3,439	5,609	678,317	105	6,906,503	1941
1942	47	121,083	1,758,741	597,373	189,210	2,033	2,668,779	44	352,475	1,051,359	328,860	180,698	34,916	1,948,308	7	438,111	8,550	16,556	2,629	6,178	472,024	98	5,089,109	1942
1943	34	85,313	1,042,610	672,359	92,245	1,868	1,894,395	34	582,287	1,277,915	167,809	66,311	37,421	2,131,743	14	1,314,575	1,532	42,410	178	11,676	1,370,371	81	5,396,509	1943
1944	38	131,580	1,081,334	655,188	88,380	1,765	1,958,247	45	461,718	1,002,056	286,498	96,255	29,718	1,876,245	13	987,459	3,932	44,039	2,418	5,456	1,043,304	94	4,877,796	1944
1945	41	129.514	1,039,521	265,845	107,425	2,582	1,544,887	43	434,872	1,198,665	331,654	85,506	30,041	2,080,738	8	609,132	1,623	92,551	3,103	9,086	715,495	92	4,341,120	1945
1946	41	59,029	999,443	321,037	94,074	1,612	1,475,195	48	350,728	1,053,605	257,909	96,301	25,356	1,783,899	20	656,141	4,073	38,209	2,686	10,906	712,015	108	3,971,109	1946
1947	40	56,032	680,693	260,666	72,434	4,019	1,073,844	47	470,056	1,034,475	196,731	74,388	34,790	1,810,430	21	1,350,151	8,449	42,814	1,893	14,885	1,418,192	107	4,302,466	1947
1948	39	39,317	683,972	403,959	165,033	5,973	1,298,254	57	318,638	616,822	291,977	69,259	34,774	1,331,470	24	1,277,508	3,250	78,725	7,507	13,898	1,380,888	120	4,010,612	1948
1949	36	39,485	2,102,604	243,080	125,059	1,046	2,511,274	55	391,244	580,438	221,089	59,409	37,213	1,289,393	21	529,859	...	44,140	4,411	11,974	590,384	112	4,391,051	1949
1950	36	49,475	535,662	500,422	116,344	560	1,202,463	55	513,985	558,263	242,301	68,233	40,386	1,423,158	21	590,048	1,609	35,056	6,924	13,375	647,012	112	3,272,643	1950
1951	42	70,317	1,226,582	466,334	262,393	636	2,028,262	59	362,554	333,091	227,632	72,762	71,648	1,067,687	13	339,592	75	25,521	8.003	15,328	388,519	114	3,484,468	1951
1952	40	74,510	593,422	527,960	122,277	2,756	1,320,925	48	377,094	577,407	399,864	67,117	34,935	1,456,417	21	729,560	1,339	38,836	7,692	19,359	796,786	109	3,574,128	1952
1953	35	120,971	355,580	418,260	90,489	1,571	986,871	40	330,933	604,281	333,390	36,730	33,160	1,338,494	19	530,186	1,108	45,398	2,703	20,810	600,205	94	2,925,570	1953
1954	27	113,130	519,364	601,800	87,996	2,642	1,324,932	39	299,325	621,214	381,536	77,041	28,257	1,407,373	12	393,201	9,835	42,890	6,228	22,695	474,849	78	3,207,154	1954
1955	26	55,561	547,765	177,690	64,814	1,157	846,987	44	233,290	722,448	162,999	47,294	22,078	1,188,109	12	372,756	90	22,968	2,476	24,583	422,873	79	2,457,969	1955
1956	23	80,855	565,076	267,934	44,030	2,082	959,977	44	357,242	547,775	375,417	47,525	22,082	1,350,041	11	577,461	3,198	31,683	4,385	22,889	640,336	78	2,950,354	1956
1957	23	82,276	404,581	362,979	53,567	1,567	904,970	36	188,682	309,193	435,750	29,275	17,114	980,014	13	492,072	...	31,087	4,448	29,303	556,910	72	2,441,894	1957
1958	21	79,508	674,697	348,832	50,277	983	1,154,297	39	131,071	811,141	361,403	40,261	9,649	1,353,525	17	277,775	61,813	44,571	11,453	41,146	436,758	71	2,944,580	1958
1959	17	61,702	472,684	162,948	60,013	1,374	758,721	27	161,251	162,229	203,000	35,185	11,736	573,410	9	361,550	32	49,378	3,091	32,157	446,208	53	1,778,339	1959
1960	32	41,468	136,928	109,100	16,602	927	305,025	41	243,390	531,163	361,567	54,064	10,126	1,200,310	35	886,777	12,604	106,856	5,358	33,097	1,044,692	108	2,550,027	1960
Ave.	28	78,030	549,668	344,384	85,246	1,570	1,059,097	41	268,483	521,994	324,256	50,725	26,079	1,191,537	16	496,093	9,009	43,919	5,584	26,137	580,814	85	2,831,448	Ave.

NOTE: Average is for the last ten years. Figures for years prior to 1952, and those for 1956 and 1959, are revised from official U.S. data, those for 1960 are from PACIFIC FISHERMAN's own compilation; both are limited to fish canned in Alaska, and do not include Alaska fish canned on Puget Sound. The latter are included in figures from 1952 through 1955, which are from Pacific Fisherman's own data.

KADIAK

FISHERIES COMPANY

1826 EXCHANGE BLDG.
SEATTLE 4, WASHINGTON

ALASKA CANNED SALMON

ALASKA CANNERIES

SHEARWATER and PORT BAILEY

ESTABLISHED 1898

ANDERSON & MISKIN, LTD.

EXPORTERS

CANNED FISH

Canadian Salmon American Salmon
Canadian Herring

OFFICES

Colman Building
SEATTLE, U.S.A.

448 Seymour Street
VANCOUVER, CANADA

CABLE ADDRESS — MISKAND

RECAPITULATION OF ALASKA CANNED SALMON PACK-1960

DISTRICT	RED or SOCKEYE			PINK			CHUM			MEDIUM RED or COHO			KING or CHINOOK			GRAND TOTAL (CASES)
	1-lb & 4-lb 48-lb net	1/2-lb & 1/4-lb. 48-lb. net	Total	1-lb & 4-lb 48-lb net	1/2-lb & 1/4-lb 48-lb. net	Total	1-lb & 4-lb 48-lb net	1/2-lb & 1/4-lb 48-lb. net	Total	1-lb & 4-lb 48-lb net	1/2-lb & 1/4-lb 48-lb net	Total	1-lb & 4-lb 48-lb net	1/2-lb & 1/4-lb 48-lb net	Total	
Western Alaska	742,839	143,938	886,777	12,604	---	12,604	106,856	---	106,856	5,358	---	5,358	18,807	14,290	33,097	1,044,692
Central Alaska	153,433	89,957	243,390	502,204	28,959	531,163	357,435	4,132	361,567	50,146	3,918	54,064	965	9,161	10,126	1,200,310
Southeast Alaska	17,876	23,592	41,468	110,303	26,625	136,928	97,862	11,238	109,100	8,910	7,692	16,602	927	---	927	305,025
TOTAL ALASKA	914,148	257,487	1,171,635	625,111	55,584	680,695	562,153	15,370	577,523	64,414	11,610	76,024	20,699	23,451	44,150	2,550,027

1960 - CENTRAL ALASKA CANNED SALMON PACK

COMPANY	CANNERY LOCATION	RED or SOCKEYE			PINK			CHUM			COHO			KING or CHINOOK			GRAND TOTAL (full cs.)
		1 & 4 lb. Talls & Flats	1/2-lb. Flats (8 doz.)	TOTAL	1 & 4 lb. Talls & Flats	1/2-lb. Flats (8 doz.)	TOTAL	1 & 4 lb. Talls & Flats	1/2-lb. Flats (8 doz.)	TOTAL	1 & 4 lb. Talls & Flats	1/2-lb. Flats (8 doz.)	TOTAL	1 & 4 lb. Talls & Flats	1/2-lb. Flats (8 doz.)	TOTAL	
Alaska Packers Assn.	Chignik	17,168	9,856	27,024	7,926	---	7,926	18,380	---	18,380	331	---	331	19	---	19	53,680
	Kodiak Island	2,045	6,135	8,180	63,663	3,447	67,110	20,063	---	20,063	1,224	---	1,224	62	---	62	96,639
	Cordova	237	8,414	8,651	8,016	4,491	12,507	8,450	---	8,450	6,256	---	6,256	---	607	607	36,471
Alaska Year Round Canneries	Seldovia	891	339	1,230	2,077	580	2,657	2,882	49	2,931	94	56	150	2	---	2	6,970
	Snug Harbor	396	---	396	640	---	640	471	---	471	184	---	184	---	---	---	1,691
	Port Ashton	35	---	35	738	---	738	470	---	470	18	---	18	---	---	---	1,261
Berman Packing Co.	Ninilchik	---	5,113	5,113	4,486	---	4,486	2,131	---	2,131	999	---	999	---	---	---	12,729
Chignik Fisheries Co.	Chignik	16,774	4,928	21,702	7,926	---	7,926	18,380	---	18,380	316	---	316	18	---	18	48,342
Columbia-Wards Fisheries	Kodiak Island	1,700	763	2,463	29,914	635	30,549	7,045	8	7,053	79	18	97	4	---	4	40,166
	Kenai	4,036	3,327	7,363	9,195	492	9,687	4,857	---	4,857	785	479	1,264	278	208	486	23,657
Cook Inlet Packing Co.	Seldovia	891	340	1,231	2,077	580	2,657	2,882	---	2,882	93	55	148	---	---	---	6,918
	Snug Harbor	395	---	395	640	---	640	472	---	472	184	---	184	---	---	---	1,691
	Port Ashton	35	---	35	738	---	738	470	---	470	18	---	18	---	---	---	1,261
Copper River Co-op, Inc.	Cordova	---	3,082	3,082	---	14	14	---	1	1	---	1,958	1,958	---	225	225	5,280
Crystal Falls Fish Co.	Crystal Falls	12	918	930	---	---	---	---	---	---	561	525	1,086	---	52	52	2,068
Emard Packing Co.	Anchorage	8,214	1,116	9,330	16,620	---	16,620	8,366	---	8,366	10,818	---	10,818	315	5,934	6,249	51,383
Fidalgo Island Packing Co.	Central Alaska	2,499	822	3,321	5,285	2,783	8,068	7,645	48	7,693	540	162	702	2	---	2	19,786
P. E. Harris Co., Inc.	False Pass	31,351	3,782	35,133	23,026	36	23,062	52,195	1,609	53,804	---	53	53	82	724	806	112,858
	King Cove	129	---	129	636	---	636	2,754	---	2,754	---	---	---	---	---	---	3,519
Intercoastal Packing Co.	Kodiak Island	1,457	446	1,903	13,463	286	13,749	3,583	2	3,585	149	37	186	---	---	---	19,423
Kayak Packing Co.	Alaska Peninsula	---	---	---	2,638	---	2,638	1,735	---	1,735	---	---	---	---	---	---	4,373
Kodiak Fisheries Co.	Kodiak Island**	3,976	1,460	5,436	49,578	1,051	50,629	15,593	10	15,603	1,049	219	1,268	26	2	28	72,964
New England Fish Co.	Central Alaska	1,720	12,884	14,604	20,090	4,491	24,581	23,668	---	23,668	6,337	---	6,337	6	607	613	69,803
Ouzinkie Packing Co.	Kodiak Island	459	733	1,192	21,577	454	22,031	7,378	2	7,380	454	104	558	18	8	26	31,187
Pacific American Fisheries	King Cove	7,740	13,049	20,789	35,051	1,192	36,243	44,728	1,030	45,758	242	---	242	19	---	19	103,051
	Alitak	1,863	1,713	3,576	40,967	870	41,837	11,221	36	11,257	127	29	156	6	5	11	56,837
	Cook Inlet	1,849	---	1,849	3,895	---	3,895	4,272	---	4,272	370	---	370	---	---	---	10,386
	Port Ashton	377	---	377	9,867	---	9,867	1,924	---	1,924	187	---	187	---	---	---	12,355
Parks Canning Co.	Uyak Bay, Kodiak Island	539	305	844	6,447	136	6,583	8,308	1	8,309	36	8	44	4	3	7	15,787
San Juan Fishing & Packing Co.	Uganik Bay	2,651	760	3,411	22,925	486	23,411	6,345	4	6,349	---	---	---	5	---	5	33,176
	Port San Juan	264	---	264	12,625	---	12,625	6,357	---	6,357	287	---	287	---	---	---	19,533
Snug Harbor Packing Co.	Snug Harbor, Seldovia	4,107	---	4,107	861	---	861	3,989	---	3,989	1,689	---	1,689	10	---	10	10,656
Tidewater Packing Co.	Anchorage	---	176*	176	---	118*	118	---	28	28	---	190*	190	---	177*	177	689
Uganik Trading Co.	Uganik Bay	---	192	192	---	38	38	---	12	12	---	---	---	---	---	---	242
Valdez Fisheries, Inc.	Valdez	62	---	62	2,523	---	2,523	2,961	---	2,961	---	---	---	---	---	---	5,546
Washington Fish & Oyster Co.	Cook Inlet and Prince Wm. Sd.	121	---	121	3,954	---	3,954	952	---	952	153	---	153	---	---	---	5,180
	Kodiak Island	144	104	248	11,422	246	11,668	13,256	3	13,259	147	---	147	3	2	5	25,327
West Point Canning Co.	Uganik Bay	---	1,061	1,061	---	2,042	2,042	---	1,289	1,289	---	25	25	---	---	---	4,417
Western Fisheries Co.	Cordova	515	8,139	8,654	8,016	4,491	12,507	8,449	---	8,449	6,256	---	6,256	---	607	607	36,473
Miscellaneous		38,781	---	38,781	52,702	---	52,702	34,803	---	34,803	10,163	---	10,163	86	---	86	136,535
TOTAL		153,433	89,957	243,390	502,204	28,959	531,163	357,435	4,132	361,567	50,146	3,918	54,064	965	9,161	10,126	1,200,310

*Includes 140 cases smoked.

**Includes limited quantity of fish canned on Cook Inlet.

Canning and Selling Salmon for Over Sixty Years

Red Salmon Co.

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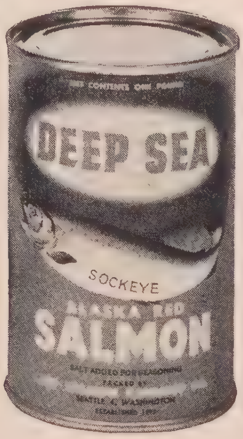
ALASKA

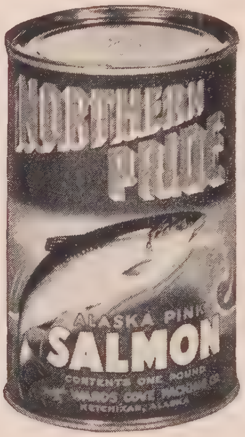
Packing
RED ALASKA SOCKEYE, ALASKA KING and ALASKA CHUM SALMON



Wards Cove Packing Co.
Beegle Packing Co.

KETCHIKAN, ALASKA

Packing
RED ALASKA SOCKEYE, ALASKA COHO, PINK and CHUM SALMON



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SEATTLE, WASHINGTON

SELLING

"DEEP SEA" BRAND — Alaska Red Salmon, Fancy Albacore Tuna, Minced Razor Clams and Dungeness Crabmeat.
"ROYAL CLUB" BRAND — Alaska Pink Salmon.
"JACK FROST" BRAND — Alaska Red Salmon and Albacore Tuna Flakes.
"PIRATE" BRAND — Alaska Chum Salmon and Grated Albacore Tuna.

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Mail Address: P. O. Box 87, University Station, Seattle 5, Wash.

CABLE ADDRESS:
"Peterson", Seattle

CENTRAL ALASKA CANNED SALMON PACKS

ALASKA PENINSULA, SOUTH SIDE (Cases)						YEAR	CHIGNIK (Cases)					
Reds	Pinks	Chums	Cohoes	Kings	TOTAL		Reds	Pinks	Chums	Cohoes	Kings	TOTAL
276,548	512,740	199,222	27,226	3,678	1,019,414	1936	100,499	35,917	10,278	4,643	108	151,455
92,639	451,139	117,147	6,836	2,262	670,023	1937	52,727	57,620	10,193	1,626	154	122,320
57,439	367,827	128,574	21,650	1,655	577,145	1938	35,117	12,071	6,792	2,254	148	56,412
149,046	292,203	120,901	9,835	4,483	576,468	1939	142,770	13,744	6,874	728	377	164,493
88,690	356,969	209,749	18,063	3,330	676,801	1940	27,772	4,083	2,349	20	----	34,224
97,695	233,438	163,058	17,298	3,008	514,497	1941	59,373	16,373	15,345	2,322	316	93,729
56,886	291,392	117,532	10,437	843	477,090	1942	56,977	22,962	11,853	1,093	378	93,263
177,000	167,024	70,727	6,657	1,934	423,342	1943	110,086	4,265	4,638	1,924	290	121,203
40,585	123,988	82,560	21,108	819	269,060	1944	47,448	29,283	6,221	1,223	442	84,617
58,984	140,319	73,752	9,923	1,765	284,743	1945	18,666	18,381	11,582	638	222	49,489
50,808	89,164	88,544	12,122	688	241,326	1946	70,817	39,544	22,049	695	305	133,410
83,407	115,916	81,921	4,343	456	286,043	1947	146,788	23,640	5,417	512	111	176,468
23,916	66,743	82,494	2,689	151	175,993	1948	33,574	47,393	31,348	79	79	112,473
47,751	70,866	39,863	1,526	723	160,729	1949	54,146	3,976	11,210	512	129	69,973
135,595	88,452	49,703	5,315	803	279,868	1950	31,644	28,737	8,885	1,135	127	70,528
15,344	116,730	43,007	3,440	183	178,704	1951	25,857	18,576	16,135	719	231	61,518
64,685	38,317	110,249	4,106	182	217,539	1952	14,852	23,113	49,359	94	20	87,438
142,477	131,958	138,117	3,364	624	416,540	1953	37,758	32,186	46,738	88	127	116,897
45,719	64,847	112,598	2,155	561	225,880	1954	11,078	29,000	38,046	93	45	78,262
45,318	76,639	54,263	1,638	541	178,399	1955	31,070	29,484	25,753	2	114	86,423
72,518	72,237	136,678	2,498	659	284,590	1956	64,071	21,149	30,934	698	40	116,892
22,676	30,168	117,452	2,301	653	173,250	1957	28,248	14,529	21,746	422	137	65,082
18,061	76,469	94,930	6,279	176	195,914	1958	26,424	18,884	31,871	94	81	77,354
23,549	45,595	78,946	983	245	149,318	1959	29,831	3,659	20,746	33	44	54,313
64,234	72,284	118,012	797	841	256,168	1960	53,262	15,852	36,759	631	37	106,541
51,458	72,524	100,425	2,756	466	227,630	Aver.	32,245	20,643	31,809	287	88	85,072

KODIAK AREA (Cases)						YEAR	COOK INLET (Cases)					
Reds	Pinks	Chums	Cohoes	Kings	TOTAL		Reds	Pinks	Chums	Cohoes	Kings	TOTAL
202,983	394,025	39,248	17,548	620	654,424	1936	188,063	51,350	23,780	31,345	19,723	314,261
120,674	769,055	29,353	14,179	357	933,618	1937	109,471	21,528	12,976	14,005	24,674	182,654
142,112	450,098	69,792	14,716	316	677,034	1938	170,725	54,894	16,260	32,745	16,060	290,684
115,604	603,492	62,185	9,442	651	791,374	1939	183,304	15,570	20,726	13,076	16,554	249,230
93,751	443,154	60,332	14,246	313	611,796	1940	129,952	122,437	26,695	46,015	15,995	341,093
121,725	508,306	57,368	22,854	638	710,891	1941	90,885	38,235	24,706	31,105	27,448	212,379
83,340	313,711	76,563	10,751	363	484,728	1942	98,418	55,722	40,110	61,734	28,617	284,604
129,105	555,209	41,766	5,682	308	730,070	1943	102,746	60,540	26,292	23,447	30,963	243,988
142,212	335,683	56,035	5,623	183	539,736	1944	156,799	96,694	23,311	25,442	25,668	327,914
154,513	491,346	64,957	5,640	521	716,977	1945	118,849	54,370	28,302	281718	22,420	252,659
65,810	541,334	37,817	3,982	34	648,977	1946	105,065	60,101	31,593	35,835	17,191	249,785
85,805	494,211	23,133	6,752	27	609,928	1947	106,180	30,073	21,183	34,430	30,718	222,584
98,030	303,564	93,918	4,046	189	499,747	1948	133,828	75,678	38,086	29,462	32,688	309,742
69,861	208,537	63,632	5,055	803	347,888	1949	165,588	19,139	21,844	26,783	31,234	264,588
64,463	266,694	73,846	5,786	408	411,197	1950	207,032	62,528	52,572	63,565	34,247	419,944
81,117	126,238	89,926	8,842	5,996	312,119	1951	171,030	24,296	21,884	27,707	59,973	304,890
89,888	281,405	141,730	4,678	1,963	519,664	1952	94,951	115,666	30,095	20,252	22,931	283,895
47,451	273,344	68,239	5,143	328	394,505	1953	101,206	27,208	41,457	18,880	28,952	217,703
34,643	382,779	141,682	6,597	682	566,383	1954	105,571	133,864	85,083	33,318	23,995	381,831
17,923	525,322	54,290	3,059	78	600,672	1955	79,006	62,454	29,450	13,698	15,034	199,642
29,461	156,127	62,970	4,990	157	253,705	1956	110,186	80,081	85,172	16,918	16,995	309,352
15,643	232,975	96,680	3,885	63	349,246	1957	58,102	18,709	122,146	9,713	12,549	221,219
18,803	254,320	91,704	3,304	95	368,226	1958	38,362	171,946	63,126	20,693	6,601	300,728
23,300	110,509	65,897	2,643	274	202,623	1959	43,466	5,919	35,244	8,855	7,057	100,541
27,924	281,122	100,076	5,102	161	414,385	1960	65,654	91,320	67,001	24,944	6,936	255,855
38,615	262,414	91,319	4,824	980	398,153	Aver.	86,753	73,146	58,066	19,498	20,102	257,566

PRINCE WILLIAM SOUND and RESURRECTION BAY (Cases)						YEAR	COPPER and BERING RIVER AREA (Cases)				REGIONAL GRAND TOTAL
Reds	Pinks	Chums	Cohoes	Kings	TOTAL		Reds	Cohoes	Kings	TOTAL	
13,440	609,537	23,660	5,245	431	652,313	1936	75,296	15	2,513	77,824	2,869,691
8,492	182,762	21,941	6,651	329	220,175	1937	78,238	5,463	3,868	87,569	2,216,359
10,615	461,114	31,218	6,846	251	510,044	1938	65,777	155	2,514	68,446	2,179,765
12,390	129,491	28,756	3,858	257	174,752	1939	52,285	1,116	2,192	55,593	2,011,910
7,065	521,745	54,001	10,257	182	593,250	1940	37,847	30,521	1,337	69,705	2,326,869
7,083	217,007	73,776	6,430	100	304,396	1941	36,868	83,142	3,067	123,077	1,958,969
13,289	366,965	82,633	13,703	449	477,039	1942	47,849	84,322	5,262	137,433	1,954,157
9,285	511,818	30,620	8,237	2,595	562,555	1943	57,418	21,837	4,893	84,148	2,165,306
12,741	416,848	118,159	7,902	158	555,808	1944	62,780	34,949	2,517	100,246	1,877,381
17,382	493,482	154,080	4,941	102	669,987	1945	70,744	41,103	6,037	117,884	2,091,739
10,432	317,329	76,003	16,037	408	420,209	1946	45,645	25,821	7,145	78,611	1,772,318
17,995	380,017	65,018	7,270	180	470,440	1947	30,717	22,231	3,596	56,544	1,822,077
19,115	123,411	47,008	5,048	74	194,656	1948	13,536	28,405	1,237	43,180	1,335,791
8,423	275,830	83,195	13,016	167	380,631	1949	46,404	15,986	1,964	64,354	1,288,163
7,179	111,838	57,464	12,441	88	189,010	1950	70,592	18,997	4,517	94,106	1,464,654
66,871	47,249	56,680	30,555	5,195	206,550	1951	39,963	24,513	3,737	68,213	1,131,994
107,471	118,905	68,430	37,987	9,231	342,024	1952	103,533	1,605	9,337	114,475	1,565,035
5,355	124,122	34,929	4,454	37	168,897	1953	51,136	3,884	3,163	58,183	1,372,725
1,688	1,240	1,670	603	---	5,201	1954	102,850	33,035	4,336	140,221	1,397,778
1,864	5,941	1,602	663	---	10,070	1955	56,071	27,610	5,840	89,521	1,164,727
15,771	186,537	49,334	3,678	31	255,351	1956	49,023	20,242	3,330	72,595	1,292,485
6,323	35,431	74,706	1,891	171	118,522	1957	48,994	10,198	2,149	61,341	988,660
1,001	296,140	75,408	529	2	373,080	1958	28,328	9,285	2,219	39,742	1,355,044
---	---	---	----	---	---	1959	25,145	22,045	2,980	50,170	556,965
2,701	70,554	39,711	1,267	2	114,235	1960	29,615	21,362	2,149	53,126	1,200,310
20,905	88,612	40,247	8,163	1,467	159,393	Aver.	53,466	17,378	3,924	74,759	1,202,572

NOTE: Figures are based on Alaska Department of Fish and Game and U. S. Fish & Wildlife Service final data, which DO NOT include fish caught in these areas and canned elsewhere, and accordingly are somewhat different from those in other tables compiled independently by PACIFIC FISHERMAN. Figures for the latest year shown are preliminary. "Average" figures are for the last ten years.

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PACIFIC AMERICAN FISHERIES, Inc.
Sales Subsidiary: DEMING & GOULD COMPANY, Bellingham, Washington

Southeast Alaska Canned Salmon Pack by Subdivisions

KETCHIKAN DISTRICT (Cases)						YEAR	WRANGELL-PETERSBURG DISTRICT (Cases)					
Kings	Reds	Cohoes	Pinks	Chums	TOTAL		Kings	Reds	Cohoes	Pinks	Chums	TOTAL
78	14,724	9,848	300,114	116,170	440,934	1956	362	8,720	9,456	98,075	40,116	156,729
84	17,804	12,746	120,358	117,063	268,055	1957	715	12,481	7,583	78,692	73,409	172,880
50	29,332	16,234	336,588	100,902	483,106	1958	264	16,124	8,322	158,997	91,303	275,010
80	6,803	4,960	123,993	40,462	176,298	1959	449	10,462	10,768	117,916	32,597	172,192
327	2,571	2,488	43,246	29,036	77,668	1960	174	6,102	1,012	35,518	15,769	58,575

NORTHERN DISTRICT (Cases)							WEST COAST DISTRICT (Cases)						
Kings	Reds	Cohoes	Pinks	Chums	TOTAL		Kings	Reds	Cohoes	Pinks	Chums	TOTAL	REGIONAL TOTAL
806	42,761	19,536	108,618	110,727	282,448	1956	26	6,646	7,657	127,465	27,269	169,063	1,049,174
518	38,599	26,325	74,077	153,769	293,288	1957	41	13,628	10,893	131,094	20,515	176,171	910,394
514	29,530	19,109	113,089	138,490	300,732	1958	15	6,881	7,647	94,225	26,431	135,199	1,194,047
672	26,815	36,107	163,578	71,650	298,822	1959	8	17,313	6,155	66,409	15,645	105,530	752,842
329	25,237	9,035	26,935	41,324	102,860	1960	34	9,679	4,698	31,522	19,507	65,440	304,543

NOTE: Data are from records of the Alaska Department of Fisheries and Game, and may show slight discrepancies from totals derived by direct report from operators. In general these will be due to different methods of counting cases.

- Alaska fishing season of 1960 was notable for several reasons, including the great Bonanza on Bristol Bay, and the great failure in Southeast Alaska; but its unique character is based fundamentally on the fact that, for the first time in history, Alaska exercised control of its own fisheries.

The state entered into full authority over its resource with the opening of the year, and is generally credited with having discharged its responsibility admirably, effectively, and intelligently.

Clarence L. Anderson, Alaska Commissioner of Fish and Game, fell seriously ill within a few weeks after control of the fisheries passed to the state and was unable to direct the ADF field operations. However, working from Juneau, and through his deputy director, Clarence F. Pautzke, he administered a brilliant example of resource management.

- The Alaska season of 1960, as viewed by the ADF, is summarized thus:

In 1960 the fishermen began to take to their respective fishing areas in May. As the season advanced and more areas opened, the coastal waters from Ketchikan to Bristol Bay began to bristle with a formidable array of fishing gear. Twelve thousand fishermen, manning approximately 5,000 fishing boats, 336,000 yards of purse seines, 301,000 yards of anchor and shore set nets, 952,000 yards of gillnet, 32,000 troll hooks, along with 11 fish traps and eight fish wheels, were put into operation.

At appointed stations along the coast, state fish and game biologists of the Alaska Commercial Fisheries and Protection Divisions were the referees, to enforce the rules promulgated by the Fish and Game Board to insure future runs.

- The first 1960 returns set the computer machines in the Department's Statistical Unit to chattering on the week ending May 29. The Central district, which includes Copper River, Prince William Sound, Cook Inlet, Kodiak and the Alaska Peninsula chalked up 5,318 cases of Kings and Reds. Southeastern, which includes Yakutat, and all of the Panhandle; and the Western district, which embraces North Peninsula, Bristol Bay and the Yukon had no pack as yet.

In the week ending July 3, Southeastern reported its first pack, 15,118 cases. The Central district's pack totaled 136,656. The Western district's pack was climbing rapidly with the

Pacific Canned Salmon Packs and Values

Packs reduced to basis of full cases of 48 lbs. net. Values calculated from best data available.

Year	Alaska		Washington		Oregon		California		U.S. Total		British Columbia		Grand Total	
	Cases	Value ($)	Cases	Value ($)	Cases	Value ($)	Cases	Value($)	Cases	Value ($)	Cases	Value ($)	Cases	Value ($)
1939	5,239,211	35,110,571	478,246	3,944,000	251,070	3,640,898	...	...	5,971,527	42,695,469	1,539,070	10,449,945	7,510,597	53,145,414
1940	5,028,378	31,828,451	222,808	2,825,000	297,716	4,129,220	...	...	5,548,902	38,782,681	1,467,227	11,427,923	7,016,129	50,209,908
1941	6,906,503	57,466,702	491,311	6,162,000	399,840	5,925,444	1,125	13,500	7,798,779	69,567,646	2,248,870	18,406,545	10,047,649	87,974,191
1942	5,089,109	48,677,509	366,065	6,909,000	397,331	6,890,162	...	...	5,852,515	62,476,671	1,811,560	20,050,238	7,664,075	82,526,909
1943	5,396,509	58,579,194	149,175	2,309,000	130,707	2,857,246	767	16,000	5,677,158	63,761,440	1,258,221	11,673,469	6,935,379	75,434,909
1944	4,877,796	51,606,544	81,490	1,774,000	159,783	3,445,244	864	17,660	5,119,943	56,843,448	1,097,558	11,479,093	6,217,521	68,322,541
1945	4,338,692	44,528,964	414,258	4,845,000	155,292	3,287,812	2,755	38,000	4,913,335	52,699,776	1,739,311	18,409,962	6,652,646	71,109,738
1946	3,971,109	58,667,561	385,437	13,020,000	206,563	7,165,645	5,034	153,000	4,568,149	79,006,206	1,348,138	17,532,462	5,916,287	96,538,668
1947	4,302,466	91,297,885	957,429	21,420,000	338,852	11,133,690	13,917	513,000	5,612,664	124,364,575	1,505,157	24,900,000	7,117,379	149,264,575
1948	4,014,891	96,528,730	484,102	12,685,858	314,556	10,956,513	11,417	366,095	4,824,966	120,537,196	1,308,137	26,579,000	6,133,103	147,116,196
1949	4,391,591	81,263,168	973,740	17,481,282	158,472	4,665,290	1,113	21,240	5,524,916	103,430,980	1,436,464	27,654,489	6,961,380	131,085,469
1950	3,272,643	81,403,511	670,341	18,285,000	176,063	6,193,000	...	...	4,119,047	105,881,511	1,482,560½	30,155,177	5,602,056½	138,885,502
1951	3,631,918	84,649,330	906,252	21,357,974	175,091	6,631,198	...	...	4,713,261	112,638,502	1,955,475	46,261,080	6,668,736	158,899,582
1952	3,574,191	76,357,016	749,591	17,122,352	140,565	4,784,421	703	20,292	4,455,022	99,636,808	1,293,435	27,751,435	5,741,490	127,388,243
1953	2,934,667	60,987,334	848,422	18,680,750	127,808	4,063,675	436	15,425	3,911,333	83,747,184	1,821,269	35,060,600	5,732,602	118,807,784
1954	3,094,753	63,356,724	973,941	25,727,689	92,291	3,130,700	2,162	65,431	4,163,147	92,280,544	1,742,736	39,293,176	5,905,883	131,573,720
1955	2,457,969	58,696,300	764,719	17,569,902	138,250	4,996,355	847	30,611	3,286,785	81,293,168	1,406,100	31,644,673	4,692,885	112,937,841
1956	2,950,354	76,948,880	334,505	11,097,115	147,105	5,401,329	694	25,424	3,432,658	93,472,748	1,118,279	32,231,241	4,550,937	125,703,989
1957	2,441,894	62,564,386	624,842	18,296,970	118,161	4,948,224	2,174	78,131	3,187,071	85,887,711	1,424,264	35,872,414	7,798,406	207,647,836
1958	2,944,580	65,531,283	625,909	20,659,030	134,754	6,053,733	1,005	46,230	3,706,248	92,290,276	1,908,056	56,740,772	5,614,304	149,031,048
1959	1,778,339	49,493,910	585,487	18,118,907	101,712	4,239,463	...	...	2,465,538	71,852,280	1,077,097	35,280,411	3,542,635	107,132,691
1960	2,550,027	79,294,564	169,088	7,773,850	61,469	2,786,301	...	...	2,780,584	91,026,350	632,089	23,216,072	3,412,673	114,242,422

NOTE: Data for current year are from original sources, and are based on origin of fish canned. Data for previous years generally are from official sources, which disregard origin in cases where fish caught in one area are canned in another.

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Filament NYLON Netting

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- EASIER TO HANDLE
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- KNOT SLIPPAGE ELIMINATED
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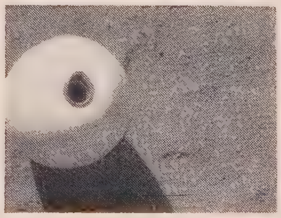

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vanguard of a giant Red salmon run already in the can. The Red pack in the Western district stood at 213,413 cases. The three districts now led 1959 by 135,725 cases.

By July 24, Southeastern had packed 144,603 cases and Central with a pack of 528,584 cases had almost doubled the 1959 pack. Western which in 1959 at this date had packed only 446,761 cases had soared to over 1,000,000.

By August 14, the Southeastern pack had climbed slowly and was less than half the pack of 1959, which was considered a poor year. Central had sprinted ahead with a half-million cases to over 1,000,000. With the Bristol Bay red salmon run apparently past, Western Alaska was peaked near 1,046,470 cases.

By September 11, Southeastern was lagging by over 400,000 cases behind 1959.

The Pink run in this district was acknowledged a failure, but this failure extended from Prince William Sound south into British Columbia. Because of the failure of Pinks over a wide contiguous area, it is generally thought there was an unusually heavy mortality in the ocean shortly after the Pinks went from fresh water to the sea in the spring of 1959.

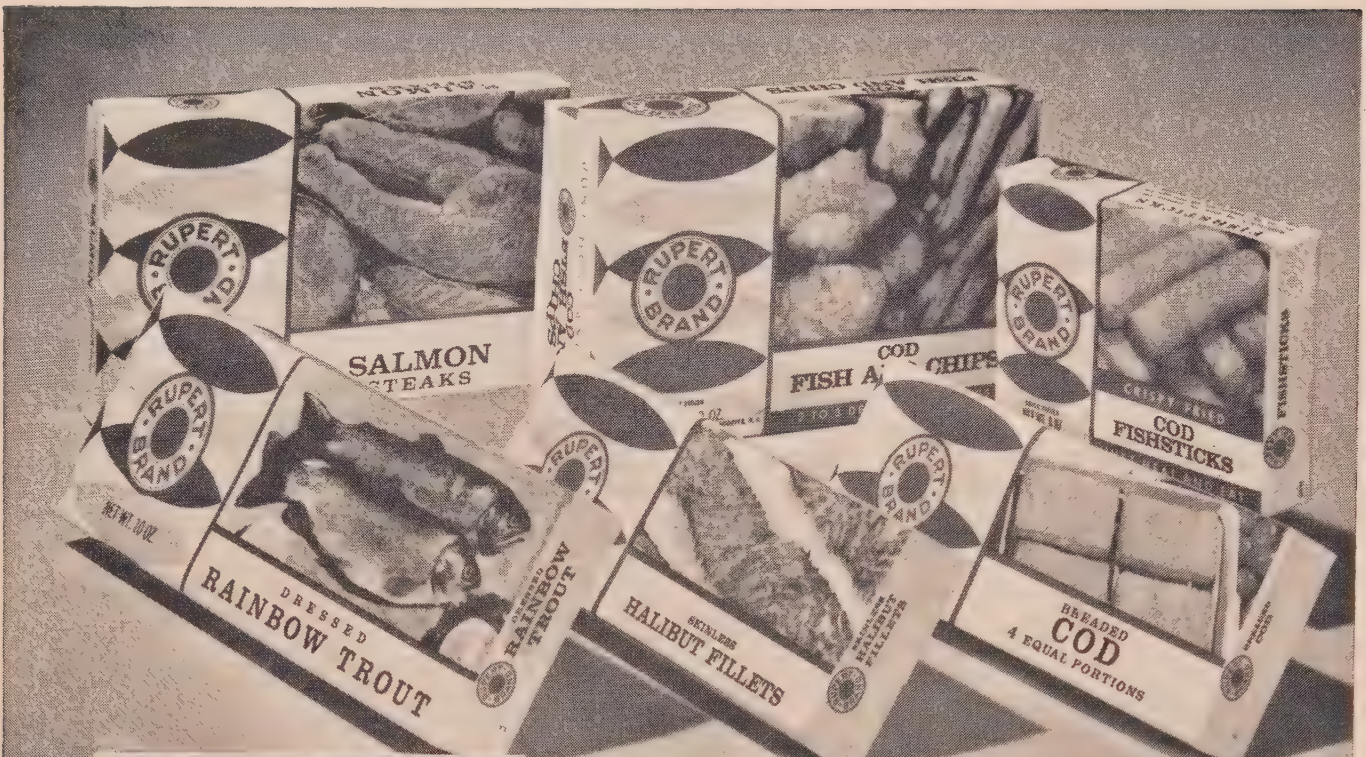
Cordova was hard-hit by a poor run in Prince William Sound, but the Central district, with a pack of over 1,000,000 cases, was considered in good shape.

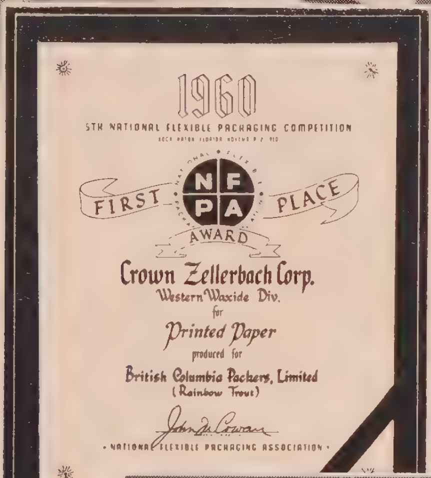
Western district proved a Bonanza after so many slim seasons. With the help of a great salmon run into Bristol Bay, the 1960 Western pack doubled that of 1959. The canneries, with limited facilities, unable to handle the flood of fish, had reluctantly limited the fishermen's catches. The management team of fish and game biologists of the Commercial Fisheries Division had, in the first year of state control, won the commendation of industry and fishermen for their on-the-spot pronouncements on openings and closures and other regulatory measures affecting the fisheries.

- Except for a few scattered endeavors, the week ending September 25 marked the end of the 1960 Alaska salmon canning season. Preliminary figures by the Department's Statistical Unit showed Southeastern's final pack totaled 304,543 cases which is far below the last five years average of 943,425 cases. However, Central district's 1,200,310 cases and Western's 1,044,692 brought the grand total of Alaska's preliminary pack figures to 2,549,545 cases, or 771,256 cases above 1959.

1960-SOUTHEAST ALASKA CANNED SALMON PACK

COMPANY	CANNERY LOCATION	RED or SOCKEYE			PINK			CHUM			COHO			KING	GRAND TOTAL (full cases)
		1-lb. Talls etc.	1/2-lb. Flats (8 doz.)	TOTAL	1-lb. Talls etc.	1/2-lb. Flats (8 doz.)	TOTAL	1-lb. Talls etc.	1/2-lb. Flats (8 doz.)	TOTAL	1-lb. Talls etc.	1/2-lb. Flats (8 doz.)	TOTAL		
Alaska Packers Association	S.E. Alaska	299	---	299	2,232	---	2,232	2,418	---	2,418	133	---	133	21	5,103
Annette Islands Canning Co.	Metlakatla	183	551	734	10,100	3,075	13,175	5,248	663	5,911	321	417	738	---	20,558
	Hood Bay	61	---	61	108	---	108	201	---	201	6	---	6	---	376
	Klawock	137	---	137	1,044	---	1,044	173	---	173	20	---	20	---	1,374
Columoia Riv. Packers Assn.	S.E. Alaska	70	8	78	298	44	342	1,873	18	1,891	53	5	58	9	2,378
Excursion Inlet Packing Co.	Excursion Inlet	284	6,666	6,950	2,585	2,727	5,312	11,078	764	11,842	528	4,019	4,547	219	28,870
Columbia - Wards	Excursion Inlet	26	---	26	27	---	27	50	---	50	2	---	2	---	105
	Petersburg	24	---	24	1,164	---	1,164	352	---	352	12	---	12	8	1,560
	Wards Cove	34	34	68	1,895	405	2,300	735	74	809	104	20	124	43	3,344
	Waterfall	1,623	---	1,623	3,029	---	3,029	2,095	---	2,095	704	---	704	---	7,451
Fidalgo Island Packing Co.	S.E. Alaska	1,190	68	1,258	4,546	1,662	6,208	5,467	448	5,915	517	2	519	32	13,932
Fishermen's Packing Corp.	S.E. Alaska	1,279	24	1,303	4,117	229	4,346	3,743	---	3,743	394	30	424	18	9,834
Haines Packing Co.	Letnikof Cove	---	4,135	4,135	---	601	601	---	1,730	1,730	---	167	167	32	6,665
P. E. Harris Co., Inc.	Hawk Inlet	2,329	---	2,329	4,180	---	4,180	4,280	---	4,280	701	---	701	33	11,523
Hood Bay Salmon Co.	Hood Bay	499	---	499	2,567	---	2,567	4,401	---	4,401	319	---	319	---	7,786
Hydaburg Co-op Assn.	Hydaburg	746	---	746	5,025	---	5,025	3,985	---	3,985	299	---	299	12	10,067
Juneau Cold Storage Co., Inc.	Juneau	143	---	143	486	---	486	1,751	---	1,751	805	---	805	--	3,185
Kayler-Dahl Fish Co., Inc.	Petersburg	---	2,728	2,728	2,239	---	2,239	1,633	---	1,633	220	---	220	---	6,820
Keku Canning Co.	Kake	403	---	403	4,475	---	4,475	2,449	---	2,449	132	---	132	---	7,459
	Metlakatla	9	---	9	86	---	86	200	---	200	23	---	23	---	318
	Klawock	2	---	2	116	---	116	16	---	16	6	---	6	---	140
Klawock Oceanside Packing Co.	Klawock	1,087	---	1,087	4,904	---	4,904	3,566	---	3,566	508	---	508	14	10,079
Lutak Fish Co.	Haines	---	755	755	---	27	27	---	177	177	27	---	27	---	986
Nakat Packing Co.	Waterfall	19	2,923	2,942	11,374	5,846	17,220	5,892	4,419	10,311	19	1,542	1,561	97	32,131
New England Fish Co.	S.E. Alaska	1,502	3,917	5,419	15,128	5,227	20,355	12,522	1,565	14,087	1,247	1,110	2,357	80	42,298
Pacific American Fisheries	S.E. Alaska	---	1,612	1,612	4,339	3,084	7,423	4,217	1,183	5,400	---	193	193	57	14,685
Pelican Packing Co.	Pelican	3,616	---	3,616	5,164	---	5,164	6,896	---	6,896	772	---	772	---	16,448
Petersburg Processors, Inc.	Petersburg	---	33	33	4,351	---	4,351	1,882	---	1,882	39	128	167	112	6,545
Wards Cove Packing Co.	S.E. Alaska	593	112	705	7,489	2,014	9,503	4,384	197	4,581	459	59	518	91	15,398
Whiz Fish Products Co.	Kake, Metlakatla, Klawock	414	---	414	4,676	---	4,676	2,664	---	2,664	160	---	160	8	7,922
Whitney & Co.	S.E. Alaska	1,304	26	1,330	2,559	1,684	4,243	3,691	---	3,691	380	---	380	41	9,685
TOTALS		17,876	23,592	41,468	110,303	26,625	136,928	97,862	11,238	109,100	8,910	7,692	16,602	927	305,025





1960

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FIRST NFPA PLACE

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(Rainbow Trout)

John McCowan

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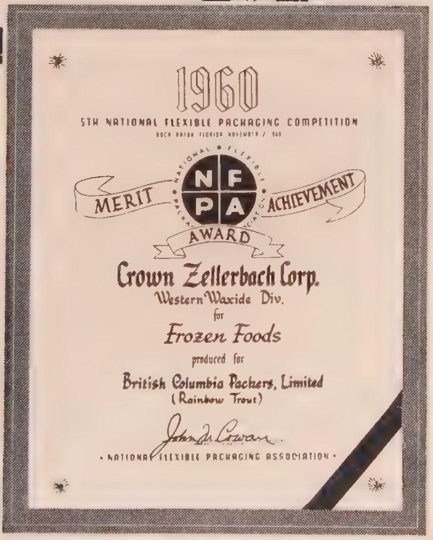

1960

5TH NATIONAL FLEXIBLE PACKAGING COMPETITION

MERIT NFPA ACHIEVEMENT

AWARD

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Western Waxide Div.
for
Frozen Foods
produced for
British Columbia Packers, Limited
(Rainbow Trout)

John McCowan

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ARE PRODUCTS OF BRITISH COLUMBIA PACKERS, LIMITED

SALMON
British Columbia

- The 1960 season was one that British Columbia's fishermen and packers would just as soon forget. Things were tough all over.

The disappointing production of salmon, of course, was only one of several adverse factors that beset B.C.'s fisheries economy. The herring fleet was idle for 11 months; there was a complete shutdown in whaling; but salmon is traditionally the dominant element, and when the salmon catch is down the whole industry is in a slump.

The salmon pack was only 632,089 cases, compared with the 10-year average of more than 1,500,000 cases. The canned pack figure, of course, doesn't include the salmon exported frozen in considerably quantity, but it is probably a fair reflection of what could only be described, by any reckoning, as a poor year — one of the poorest in history.

- The big salmon item invariably is Sockeye, but only 226,864 cases were packed—the smallest pack, with a couple of exceptions, in half a century. A small pack of Sockeye had been expected, but it had been hoped that it would be offset to some extent by relative abundance of Pinks. The Pinks pack, however, was one of the smallest on record—less than 220,000 cases. Excepting the years 1921, 1940 and 1946, when similar conditions prevailed, it was the lightest Pink pack since World War I. The Chum pack, totalling less than 87,000 cases, was the smallest in 30 years, although a large percentage of the Chum catch was exported frozen.

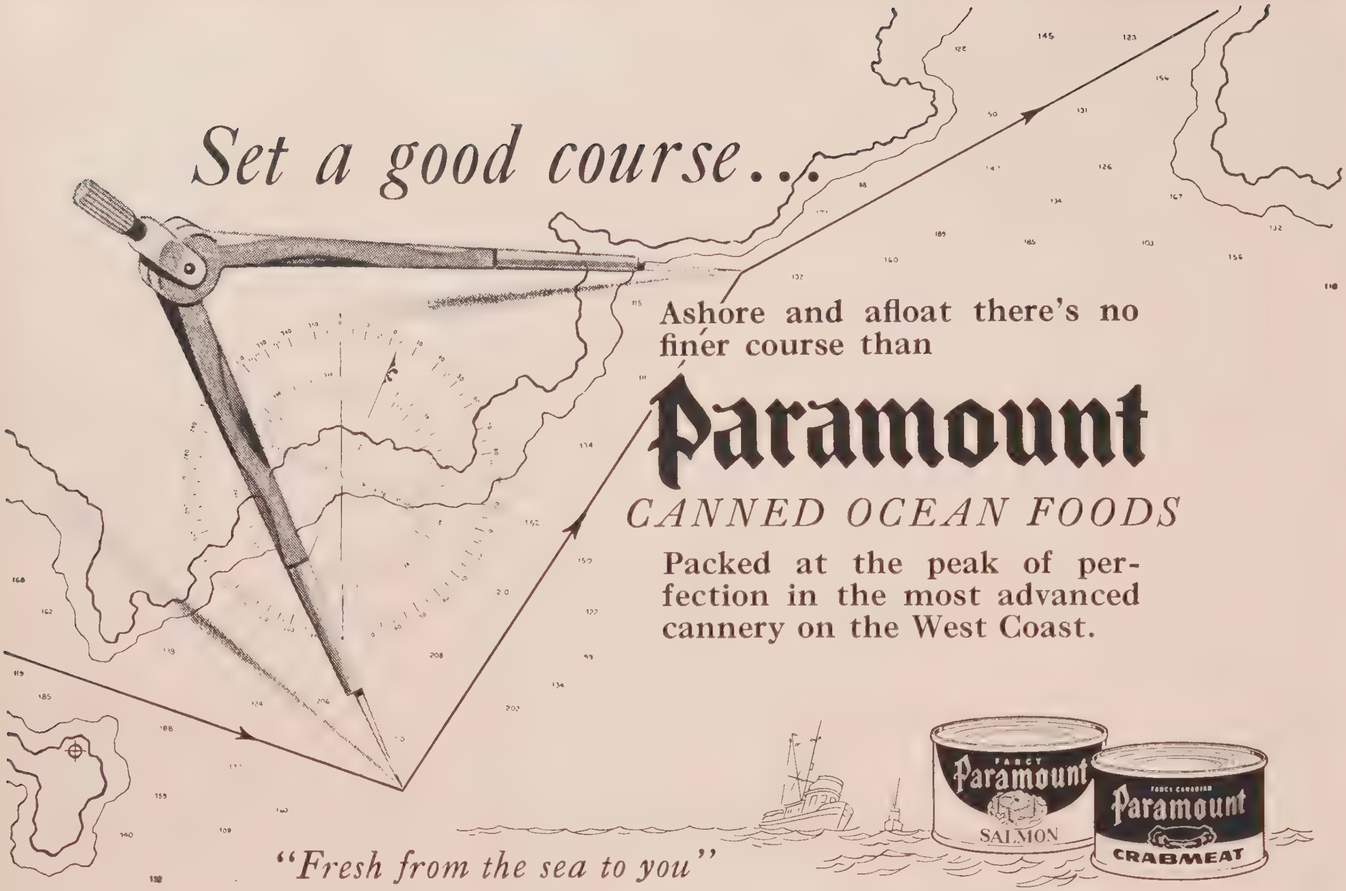
The total pack of all B.C. salmon was the smallest since 1908, with the single exception of 1921, when it was down to 603,000 cases, largely as result of economic conditions. What had happened? There was no costly tie-up due to strike conditions, as there had been in 1959. The fishermen were out in force all season, although restricted by closures and other limitations to provide adequate escapement. But the fish simply weren't there to be caught. And the reasons were obviously tied up with the problem of ocean survival which to at least some extent defied all authorities.

Actually, the International Pacific

1960 - BRITISH COLUMBIA CANNED SALMON PACK - 1960

	# Canneries	(Cases)							
		Sockeye	Springs	Steelheads	Bluebacks	Coho	Pinks	Chums	TOTAL
District No. 1 (FRASER RIVER & HOWE SOUND)	21	226,905	5,913	500	23,456	68,891	219,624	86,800	632,089
Anglo-B.C. Packing Co., Ltd. - "Phoenix"									
British Columbia Packers, Ltd. - "Imperial"									
Canadian Fishing Co., Ltd. - "Home"									
Carlyle Packing Co.									
Johnston Fishing & Packing Co., Ltd. - "Glen Rose"									
Francis Millerd & Co., Ltd. - "Great Northern"									
Nelson Bros. Fisheries, Ltd. (Colonial)									
North American Fisheries									
Queen Charlotte Fisheries, Ltd. - "Bidwell"									
John Safarik & Sons									
Seafood Products, Ltd.									
Tulloch Western Fisheries, Ltd.									
District No. 2A (SKEENA & NAAS AREAS)									
Anglo-B.C. Packing Co., Ltd. - "North Pacific"									
British Columbia Packers, Ltd. - "Sunnyside"									
Cassiar Packing Co., Ltd. - "Cassiar"									
Nelson Bros. Fisheries, Ltd. - "Port Edward"									
Babcock Fisheries, Prince Rupert									
Royal Fisheries, Prince Rupert									
District No. 2B (CENTRAL AREAS, etc.)									
British Columbia Packers, Ltd. - "Namu"									
District No. 2C (QUEEN CHARLOTTE IS.)									
Queen Charlotte Canners									
District No. 3 (VANCOUVER ISLAND)									
Oakland Industries, Victoria									

NOTE: Figures are preliminary statistics of the Canadian Fisheries Department and are subject to later correction. Publication of statistics for the pack by districts in British Columbia has been discontinued, because present operating practice, in which fish from one district may be canned in another tends to confuse and impair information based on quantities canned within specific areas. Figures are for full cases of 48 one-pound cans or equivalent.



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SALMON
British Columbia

Salmon Fisheries Commission's Sockeye predictions were borne out with impressive accuracy, and one redeeming fact sometimes overlooked was that 1960's Sockeye run on the Fraser was the second best *of the cycle* since 1912, so far as number of fish was concerned, although the size of the individual fish was the smallest for the cycle on record. The average weight of four-year-olds for the cycle is 6 lbs. In 1960 it was 5.3 lbs.

● It was a tough season for those charged with responsibility for regulating the fishery. The Sockeye Commission had expected the catch would be about 23,000,000 Sockeyes, even though the migration of 30,000,000 from Chilko Lake in the previous cycle year would ordinarily have produced a considerably larger run. The run was eight days later than expected.

Fishermen complained that some of the restrictions were excessive, but actually there was some danger of overfishing at one stage of the season, according to the Commission. The escapement was down to 605,000 from 879,000, but it was considered satisfactory and sufficient to insure a good run in the next cycle. Most of the decline was at Chilko, but the escapement there was large enough to provide for ample stocking of the spawning beds.

Fishing days in all areas were significantly reduced. Canadian straits fishing, although reduced from 55 to 18 days, were able to increase their percentage of the Canadian catch from 44% to 55%, and adequate escapement was provided to the Early Stuart area, although only 17,000 of an estimated 55,000 fish escaping the fishery reached the spawning grounds. There was evidence that the Yale fishways did not insure satisfactory passage, during late spring

BRITISH COLUMBIA CANNED SALMON PACK

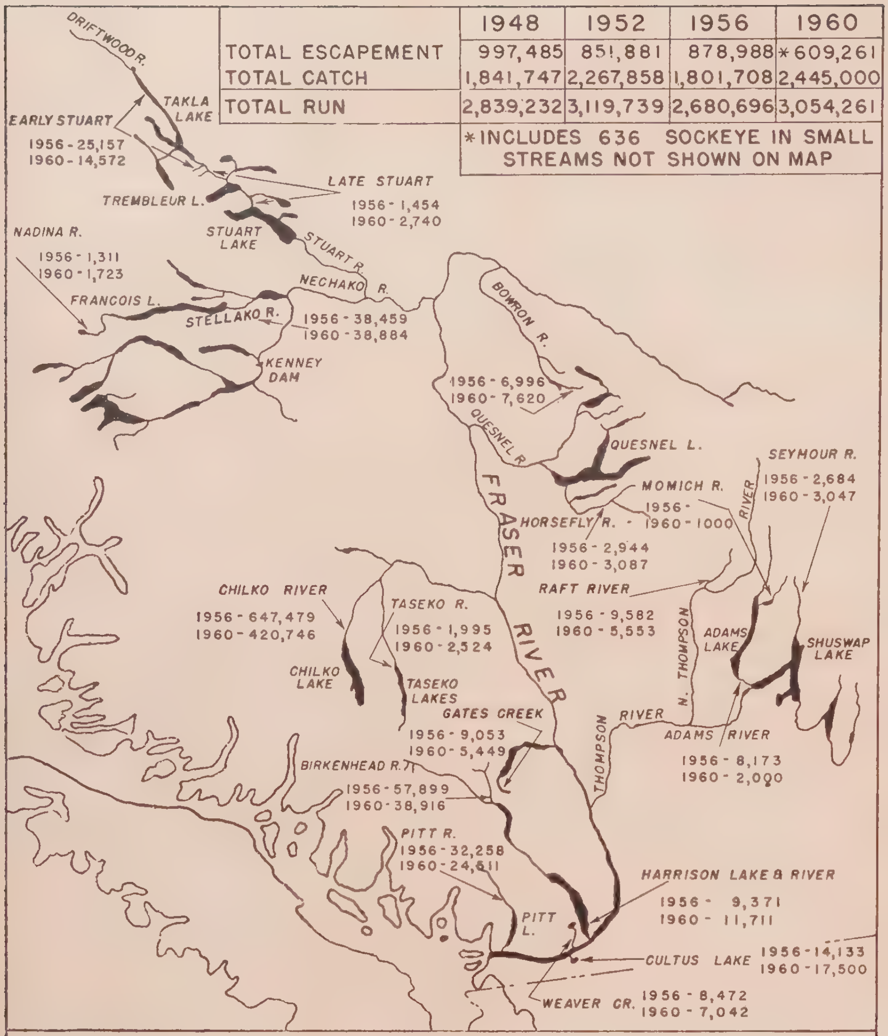
(CASES)

YEAR	Sockeyes Fraser River	Sockeyes Other Districts	Total Sockeyes	Springs	Cohoes & Bluebacks	Steelheads	Pinks	Chums	TOTAL Cases	YEAR
1903	204,809	163,908	368,717	25,657	51,918	...	27,382	...	473,674	1903
1904	72,688	250,536	323,226	38,675	66,351	...	...	37,642	465,894	1904
1905	837,489	243,184	1,080,673	28,359	44,458	...	13,970	...	1,167,460	1905
1906	183,007	276,672	459,679	32,344	69,132	...	68,035	...	629,460	1906
1907	59,815	254,259	314,074	26,098	87,900	683	118,704	...	547,459	1907
1908	63,126	291,897	355,023	28,164	81,917	1,137	76,448	...	542,689	1908
1909	542,248	298,193	840,441	19,017	61,918	...	46,544	...	967,920	1909
1910	133,045	432,870	565,915	28,789	74,382	140	34,613	58,362	762,201	1910
1911	58,487	325,022	383,509	48,456	119,702	100	305,247	91,951	948,965	1911
1912	108,784	335,778	444,762	80,437	165,102	207	247,743	58,325	996,576	1912
1913	684,596	287,582	972,178	41,049	69,822	...	192,887	77,965	1,353,901	1913
1914	185,483	351,213	536,696	49,328	120,201	...	220,340	184,474	1,111,039	1914
1915	89,040	387,002	476,042	58,104	146,956	2,927	367,352	82,000	1,133,381	1915
1916	27,394	187,395	214,789	66,726	183,623	9,982	280,644	240,201	995,065	1916
1917	123,614	116,234	339,848	76,276	157,589	11,740	496,749	475,273	1,497,475	1917
1918	16,849	259,610	276,459	107,354	191,068	15,916	527,745	497,615	1,616,157	1918
1919	29,628	339,817	369,445	100,551	199,993	4,493	346,639	372,035	1,393,156	1919
1920	44,598	306,807	351,405	118,301	120,033	2,395	520,856	84,626	1,187,616	1920
1921	35,900	128,014	163,914	49,752	124,348	1,220	192,906	71,408	603,548	1921
1922	48,744	250,870	299,614	39,596	109,276	1,657	581,979	258,204	1,290,326	1922
1923	29,423	305,224	334,647	27,142	119,141	1,760	440,932	418,055	1,341,677	1923
1924	36,200	333,403	369,603	27,456	119,989	1,811	657,538	568,916	1,745,313	1924
1925	31,523	361,120	392,643	73,499	199,180	1,996	445,400	607,904	1,720,622	1925
1926	83,589	253,406	336,995	69,189	181,894	2,165	772,993	701,962	2,065,198	1926
1927	57,085	250,947	308,032	58,977	181,968	1,746	247,617	562,109	1,360,449	1927
1928	26,530	177,011	203,541	18,856	156,757	865	792,362	863,256	2,035,637	1928
1929	60,407	220,899	281,306	19,377	196,444	672	477,969	424,982	1,400,750	1929
1930	107,896	369,782	477,678	38,804	190,594	1,656	1,111,937	401,114	2,221,783	1930
1931	54,688	236,776	291,464	27,147	102,175	1,326	206,995	55,997	685,104	1931
1932	83,447	200,908	284,355	76,060	188,971	1,168	223,716	306,761	1,081,031	1932
1933	53,481	204,626	258,107	20,266	159,052	1,459	532,558	293,630	1,265,072	1933
1934	145,579	232,303	377,882	29,784	225,430	1,282	435,364	513,184	1,582,926	1934
1935	76,415	274,029	350,444	21,920	231,492	596	514,966	409,604	1,529,022	1935
1936	165,651	249,373	415,024	29,854	246,061	1,068	591,532	597,487	1,881,026	1936
1937	103,137	222,637	325,774	16,171	133,208	844	585,576	447,602	1,509,175	1937
1938	186,794	260,659	447,453	15,531	301,123	1,035	400,876	541,812	1,707,830	1938
1939	73,216	196,672	269,888	16,103	245,096	797	620,602	386,584	1,539,070	1939
1940	86,215	280,188	366,403	17,741	224,524	1,205	213,911	643,443	1,467,227	1940
1941	149,715	305,582	455,297	50,476	391,407	3,454	427,766	920,470	2,248,870	1941
1942	418,491	248,080	666,571	24,745	211,139	4,649	270,622	633,834	1,811,560	1942
1943	72,507	92,382	164,889	10,658	186,042	3,095	530,188	363,348	1,258,221	1943
1944	107,431	140,283	247,714	19,362	183,546	3,926	389,692	255,316	1,097,557	1944
1945	122,384	205,617	329,001	12,800	218,887	2,922	825,512	350,188	1,739,311	1945
1946	381,580	161,447	543,027	8,100	100,154	4,115	116,607	576,133	1,348,138	1946
1947*	91,238	195,259	286,497	10,017	146,293	3,268	600,787	486,615	1,533,478	1947
1948	83,986	176,656	260,642	16,438	207,116	5,665	321,721	496,553	1,308,137	1948
1949	116,171	143,649	259,821	21,163	215,376	2,374	709,992	227,737	1,436,464	1949
1950	239,333	168,708	408,041	9,133	116,642	3,243	446,516	498,984	1,482,560	1950
1951	260,258	168,041	428,299	13,698	312,845	3,656	736,093	461,806	1,956,397	1951
1952	213,408	235,766	449,174	9,064	64,095	3,752	675,836	91,514	1,293,435	1952
1953	176,097	334,050	510,147	13,048	110,164	3,031	794,764	394,113	1,825,267	1953
1954	486,805	193,913	680,718	14,080	128,080	3,734	335,550	580,574	1,742,736	1954
1955	95,377	149,444	244,821	17,853	185,723	1,590	831,253	124,860	1,406,100	1955
1956	84,296	320,096	320,096	11,671	217,915	1,254	363,633	203,710	1,118,279	1956
1957	101,716	126,736	228,452	10,481	217,915	1,125	751,608	239,539	1,449,120	1957
1958	420,000	659,155	1,079,155	10,475	132,403	1,213	455,518	229,292	1,908,056	1958
1959	123,248	132,922	256,170	15,231	213,106	866	458,596	133,128	1,077,097	1959
1960	97,000	129,905	226,905	5,913	92,347	500	219,624	86,800	632,089	1960
10 Year Average	205,821	245,003	442,394	12,151	167,459	2,072	562,248	254,534	1,440,858	10 Year Aver.

NOTE: Figures for 1925 to 1959 have been corrected from official statistics. Figures for "Fraser River Sockeyes" include all Sockeyes canned in District No. 1, regardless where caught.

Figures for 1960 subject to further correction.

*Figures for 1947 include 28,321 cases packed from frozen fish of 1946 catch of various species.



	1948	1952	1956	1960
TOTAL ESCAPEMENT	997,485	851,881	878,988	*609,261
TOTAL CATCH	1,841,747	2,267,858	1,801,708	2,445,000
TOTAL RUN	2,839,232	3,119,739	2,680,696	3,054,261

*INCLUDES 636 SOCKEYE IN SMALL STREAMS NOT SHOWN ON MAP

RACIAL ESCAPEMENT FIGURES - 1960 CYCLE
FRASER RIVER SOCKEYE

I.P.S.F.C.

floods, even though they were of considerable assistance. Passage of the early Stuart run during delayed spring flood on the Fraser has been the subject of study this year.

● Typical of salmon fishing almost everywhere in British Columbia waters last summer, the 1960 Skeena runs of Sockeye and Pinks were unimpressive. The Pink run was actually one of the poorest on record.

The total Pink run on the Skeena was slightly in excess of 500,000, which was not even as large as the escapement alone in the parent year.

In view of conditions elsewhere, it was evident that the young salmon from the 1958 spawning encountered extremely unfavorable ocean conditions for growth and survival.

The Skeena Sockeye run amounted to less than half a million fish. As was expected, the 5 year-olds from the record low escapement of 1955 returned in small numbers. The 4 year-olds numbered some 266,000, or half as many as expected.

As for 1961 hopes, the Skeena's Sockeye run will consist principally of 4 year-old fish from the 1957 spawning and 5-year-olds from the 1956 spawning. The progeny of 1956 returned poorly, but it's expected that more fish from the brood year will return as 6 year-olds, probably 500,000. With average conditions, a total return of more than that many 4 year-olds would be indicated, but the 1960 jacks were very small and, judging from past experience, this fact may be an unfavorablbe one, reducing the number of 4's perhaps by 100,000. Total return of all Sockeyes in 1961, however, may well be about 1,000,000.

The 1961 Skeena Pink run, according to the river's management committee comprising W. R. Hourston, area director, and A. W. H. Needler, of the Biological Station, will return from a relatively large escapement of nearly 1,500,000 in 1959, and the survival from egg to fry following that spawning appeared to be good.

At a meeting in Vancouver late in November, the committee proposed regulations that would permit, on the basis of past experience, about 50% of the Sockeyes and over 60% of the Pinks to be taken by the commercial fishery.

Fraser River Sockeye Salmon Catch by Cycles

British Columbia	1939-	568,943	1940-	1,033,000	1941-	2,116,723	1942-	5,047,599	British Columbia
Washington		555,233		654,091		1,558,554		2,935,192	Washington
TOTAL		1,124,176		1,687,091		3,675,277		7,982,791	TOTAL
British Columbia	1943-	349,011	1944-	1,003,826	1945-	969,444	1946-	4,240,198	British Columbia
Washington		242,077		435,443		706,464		3,551,306	Washington
TOTAL		591,088		1,439,269		1,675,908		7,791,504	TOTAL
British Columbia	1947-	355,035	1948-	752,691	1949-	1,020,799	1950-	894,469	British Columbia
Washington		88,220		1,089,091		1,056,792		1,220,893	Washington
TOTAL		443,255		1,841,782		2,077,591		2,115,362	TOTAL
British Columbia	1951-	1,288,162	1952-	1,154,383	1953-	1,992,343	1954-	4,722,463	British Columbia
Washington		1,136,795		1,113,475		2,032,437		4,806,258	Washington
TOTAL		2,424,957		2,267,858		4,024,780		9,528,721	TOTAL
British Columbia	1955-	1,108,081	1956-	894,836	1957-	1,360,760	1958-	5,241,617	British Columbia
Washington		1,006,610		906,872		1,689,265		5,257,316	Washington
TOTAL		2,114,691		1,801,708		3,050,025		10,498,933	TOTAL
British Columbia	1959-	1,581,883	*1960-	1,260,000					British Columbia
Washington		1,810,738		1,190,000					Washington
TOTAL		3,392,621		2,450,000					TOTAL

*Figures for 1960 are preliminary. Figures in this table, taken from reports of the International Pacific Salmon Fisheries Commission, represent the actual numbers of Sockeye known to have been caught in waters covered by the Fraser River Sockeye Salmon treaty. No reliable catch statistics for years prior to 1939.

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Puget Sound

- Although Sockeyes exceeded the 1956 cycle substantially, and ran above forecasts, Puget Sound salmon canning operations as a whole were most disappointing in 1960.

Total production for the year, 155,831 cases, was the lowest since 1944, due to the coincident collapse in production of both Silvers and Chums.

The astonishing decline of Coho canning to 3,129 cases, only about 4% of the decade average, and the fall of Chums to the lowest level since 1945, was not due altogether to localized failure of salmon supplies. The short Puget Sound deliveries, coming late in the year as they do, were subject to diversion to fresh, frozen and cured outlets by the accumulated demand in those categories resulting from crushing disappointments in the fishing experienced throughout Southeast Alaska, British Columbia and south through Oregon and Washington.

- Salmon were scarce all along the coast, and the cumulative call for supplies for the more volatile fresh-frozen-cured trade, with its ability to pay higher prices in emergency, deprived the canneries of a greater-than-usual percentage of an already reduced salmon catch.

Thus the shocking overall decline of Puget Sound's canned salmon pack of 1960 to a very considerable degree is the result of economic competition, as well of course as the biologic fact of reduced abundance in the Silver and Chum categories at least.

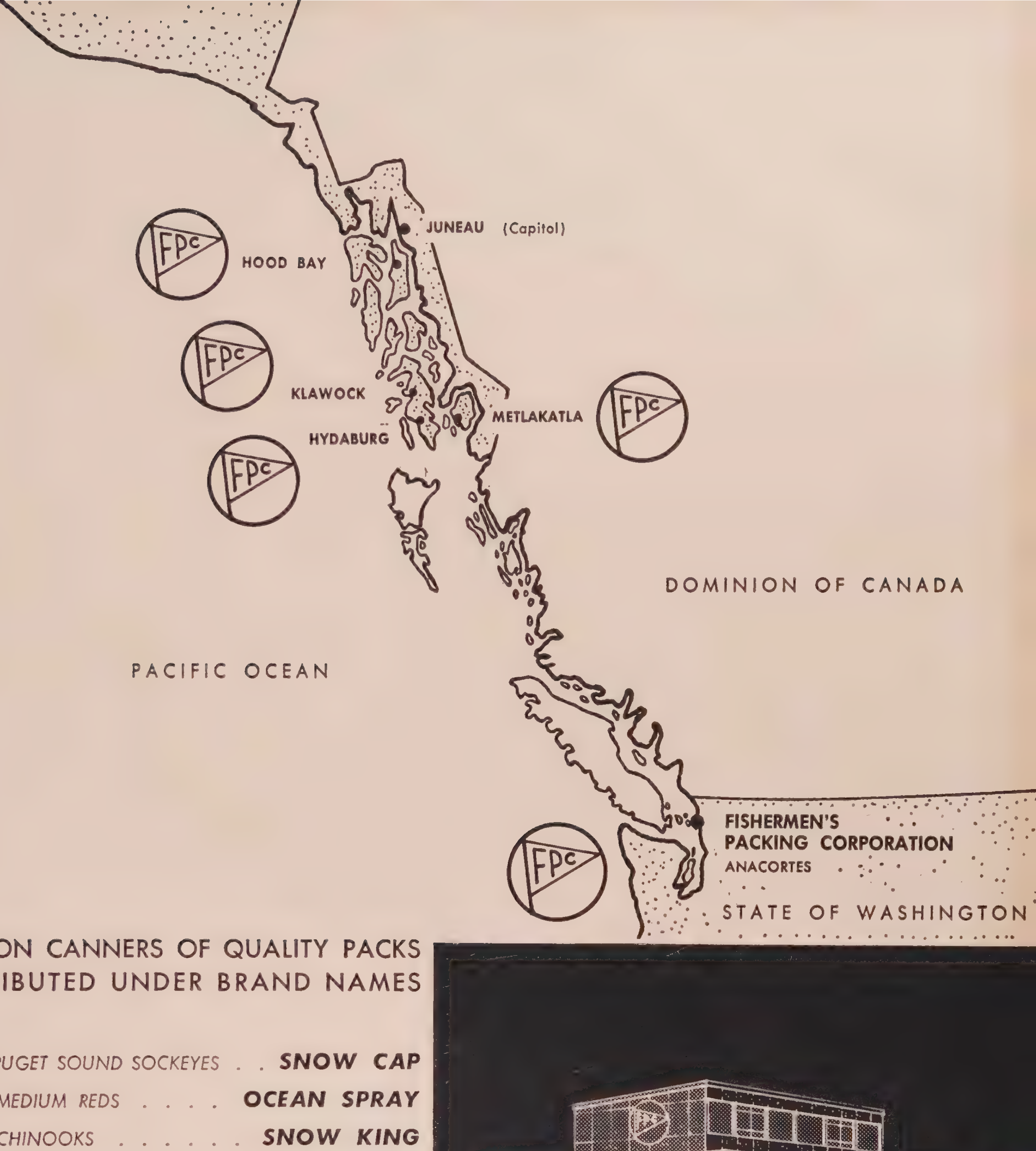
- The Fraser River Sockeye cycle, from which Puget Sound packers derive virtually their entire supply of this species, in 1960 was swinging through the second of its two weakest years.

The pack of 109,200 cases of this species was, as expected, below the production of the previous year; but it was a long way above the 70,285

PUGET SOUND CANNED SALMON PACK - 1960

COMPANY	CANNERY LOCATION	SOCKEYE			PINK			CHUM			COHO or SILVER			KING or CHINOOK			GRAND TOTAL (Full Cases)
		1/2 lb. Flats (48 lbs.)	1/4 lb. Flats (48 lbs.)	TOTAL	1-lb. Talls & 4-lb. Flats etc.	1/2 & 1/4 lb. Flats (48 lbs.)	TOTAL	1-lb. Talls & 4-lb. Talls etc.	1/2 & 1/4 -lb. Flats (48 lbs.)	TOTAL	1-lb. Talls & 4-lb. Talls etc.	1/2 & 1/4 -lb. Flat (48 lbs.) Net	TOTAL	1-lb. Talls & 4-lb. Flats etc.	1/2 & 1/4 -lb. Flats (48 lbs.) Net	TOTAL	
American Packing Co.	Anacortes & Seattle	1,823	2,964	4,787	---	---	---	4,000	5,814	9,814	---	---	---	---	---	---	14,601
Alaska Packers Assn.	Blaine	9,518	---	9,518	---	---	---	---	---	---	---	75	75	---	---	---	9,593
Burk-Fidalgo Canning Co.	Everett, Bellingham	5,684	1,725	7,409	---	22	22	803	---	803	6	---	6	---	---	---	8,240
Columbia River Packers Assn.	Bellingham	5,148	3,837	8,985	---	---	---	---	17	17	---	300	300	---	---	---	9,302
Crown Seafood Sales	Seattle	---	1,418	1,418	38	---	38	1,557	---	1,557	5	388	393	6	22	28	3,434
Dahl Fish Company	Bellingham	---	275	275	---	---	---	1,000	---	1,000	---	---	---	---	---	---	1,275
Dressel Collins Fish Co.	Seattle	---	1,041	1,041	---	1,213	1,213	---	---	---	---	68	68	---	---	---	2,322
Emard Packing Co.	Anacortes	---	---	---	---	---	---	5,454	894	6,348	---	---	---	---	---	---	6,348
Fishermen's Packing Co.	Anacortes	8,005	7,658	15,663	---	3	3	---	36	36	---	547	547	---	391	391	16,640
Friday Harbor Canning Co.	Friday Harbor	103	25	128	---	---	---	---	---	---	---	---	---	---	---	---	128
Jackson, John C., Inc.	Friday Harbor	---	728	728	---	---	---	---	---	---	---	---	---	---	---	---	728
Nakat Packing Corp.	Anacortes	5,646	---	5,646	---	1	1	---	7	7	---	105	105	---	---	---	5,759
Nelbro Packing Co.	Point Roberts	---	---	---	---	---	---	8,186	125	8,311	---	---	---	---	---	---	8,311
New England Fish Co.	Puget Sound	3,174(a)	896	4,070	---	2	2	3,061	---	3,061	113	47	160	---	---	---	7,293
Pacific American Fisheries	Bellingham	5,991	1,866	7,857	---	---	---	---	59	59	---	377	377	---	1	1	8,294
Sebastian-Stuart Fish Co.	Anacortes	2,889	623	3,512	---	---	---	---	4	4	---	25	25	---	---	---	3,541
Seaport Fish Co.	Seattle	---	---	---	---	---	---	3,650	1,926	5,576	83	210	293	81	---	81	5,950
Washington Fish & Oyster Co.	Seattle	1,300	7,507	8,807	250	593	843	3,274	186	3,460	---	288	288	---	233	233	13,631
White Sea, Inc.	Seattle	---	4,970	4,970	---	---	---	---	---	---	---	---	---	---	---	---	4,970
Whitney & Co.	Anacortes	2,591	10,111	12,702	67	1	68	250	---	250	---	366	366	78	169	247	13,633
Whiz Fish Products Co.	La Conner & Seattle	8,643	3,041	11,684	---	---	---	---	---	---	---	126	126	---	28	28	11,838
TOTALS		60,515	48,685	109,200	355	1,835	2,190	31,235	9,068	40,303	207	2,922	3,129	165	844	1,009	155,831

NOTE: This table for canned salmon packed on Puget Sound in 1960 includes some fish brought from Alaska and some imported from British Columbia for canning on Puget Sound. Such fish brought from Alaska were almost wholly Reds, all of which appear to have been canned in quarters, accounting for at least 11,900 full cases on the basis of 192 quarter-pound cans per case. Fish caught on Puget Sound elsewhere are not included in this table. (a) Includes 24 cases of 4 - lb. 12s.



SALMON CANNERS OF QUALITY PACKS DISTRIBUTED UNDER BRAND NAMES

FANCY PUGET SOUND SOCKEYES	**SNOW CAP**
FANCY MEDIUM REDS	**OCEAN SPRAY**
FANCY CHINOOKS	**SNOW KING**
PINKS	**WATERFALL**
CHUMS	**GOLDEN GLOW**

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ALASKA PRODUCTION—CUSTOM CANNED
CANNERIES AT METLAKATLA, KLAWOCK,
HOOD BAY AND HYDABURG, ALASKA

cases packed in the preceding cycle year 1956.

Virtually nothing is expected of Pinks in even-numbered years, and 1960 fit perfectly into the pattern. The pack of 2,190 cases was just about what could be expected.

- Chum salmon canning of only 40,303 cases on Puget Sound in 1960, after allowing for the extraordinary demand for fresh and frozen fish, was in line with what might have been anticipated as return from the poor runs of 1955-56-57.

This shrinkage of Chums was a primary factor, along with the long yield of Cohoes, in pulling the total production for Puget Sound down to the low level of 155,831 cases, valued at $7,162,340. This is in contrast with 10-year averages of 561,859 and $17,171,845.

The inexplicable reduction in the Chum runs, which only a few years ago were consistently heavy in British Columbia and Puget Sound, is one of the mysteries which bewilder alike the scientist and the practical fisherman.

Ten years before, in 1950, Puget Sound packed 513,000 full cases of Chums. In 1960 the total was 40,303.

The poor fishing in Southeast Alas-

PUGET SOUND CANNED SALMON PACK

Puget Sound salmon canning commenced in 1877 with a pack of 5,500 cases, but no segregation by species is available prior to 1889. From the beginning production increased, with much fluctuation, to 22,000 cases in 1887; the average for intervening years being 7,867 cases. Values shown are based on opening prices. "Average" figures at bottom of table are for last ten years.

YEAR	# of Plants Oper.	Sockeye		Pink		Chum		Coho		Chinook		TOTAL		YEAR
		Cases	Value	Cases	Value	Cases	Value	Cases	Value	Cases	Value	Cases	Value	
1888	4	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	21,975	$126,356	1888
1889	2	. . .	. . .	2,809	$7,584	1,145	$3,435	7,480	$37,400	240	$1,200	11,674	49,619	1889
1890	1	. . .	. . .	. . .	. . .	4,000	12,000	3,000	15,000	1,000	5,000	8,000	32,000	1890
1891	2	5,538	$24,921	5,647	15,246	3,093	10,825	5,869	19,368	382	2,101	20,529	72,461	1891
1892	2	2,954	11,816	. . .	. . .	16,180	56,630	7,206	24,500	86	473	26,426	93,419	1892
1893	3	47,852	103,371	17,530	47,331	11,380	31,295	11,812	59,060	1,200	6,480	89,331	247,537	1893
1894	3	41,781	188,014	9,049	24,432	22,152	60,918	22,418	89,672	. . .	. . .	95,400	363,036	1894
1895	7	65,143	273,108	23,633	62,556	38,785	94,741	50,865	154,218	1,542	7,325	179,968	591,948	1895
1896	11	72,979	350,299	. . .	. . .	26,550	73,013	82,640	264,448	13,495	67,475	195,664	755,235	1896
1897	12	312,048	1,248,192	57,268	171,804	23,310	64,103	91,900	282,133	9,500	39,045	494,026	1,805,277	1897
1898	18	252,000	1,058,400	. . .	. . .	38,400	105,600	98,600	335,240	11,200	50,624	400,200	1,549,864	1898
1899	19	499,646	2,368,334	252,733	734,241	31,481	86,427	111,387	418,176	24,364	103,180	919,611	3,170,358	1899
1900	19	228,704	1,149,000	. . .	. . .	89,100	245,025	128,200	512,800	22,350	134,100	469,450	1,940,925	1900
1901	. .	1,105,096	. . .	275,494	. . .	. . .	. . .	. . .	. . .	. . .	. . .	1,380,590	. . .	1901
1902	21	339,556	2,047,655	. . .	. . .	93,492	467,460	85,817	429,085	30,049	150,245	548,914	3,094,445	1902
1903	22	167,211	1,003,260	181,236	407,984	12,001	30,002	103,450	413,800	14,500	72,500	478,398	1,929,546	1903
1904	13	123,419	653,871	. . .	. . .	49,656	124,254	118,127	447,851	14,441	69,352	305,643	1,295,328	1904
1905	24	847,122	4,952,718	70,992	212,976	41,057	102,643	79,335	337,174	1,804	9,922	1,040,310	5,615,433	1905
1906	16	182,241	1,251,236	. . .	. . .	149,218	708,781	94,497	472,485	8,139	48,834	430,602	2,481,336	1906
1907	14	93,122	698,416	433,423	1,300,269	50,249	150,847	119,472	476,288	1,814	16,326	698,080	2,642,146	1907
1908	22	170,951	1,196,657	6,075	18,225	47,607	142,821	128,922	644,922	95,210	664,470	448,765	2,669,095	1908
1909	11	1,097,904	6,183,300	370,993	902,342	53,688	128,916	143,133	630,446	13,019	72,604	1,632,949	7,917,608	1909
1910	24	248,014	1,673,095	108	388	146,942	514,297	162,755	895,153	10,064	60,324	567,883	3,143,256	1910
1911	15	127,761	1,168,145	1,046,992	4,302,344	104,321	392,122	256,124	1,591,185	21,823	172,582	1,557,021	7,727,524	1911
1912	20	184,680	1,660,173	700	2,185	60,760	154,193	149,727	761,200	20,252	101,706	416,125	2,679,457	1912
1913	22	1,673,099	10,871,178	791,886	2,092,401	56,225	124,970	61,019	235,372	1,234	5,247	2,583,463	13,329,168	1913
1914	31	335,230	3,208,969	892	4,212	278,801	955,920	151,893	759,689	26,044	167,322	792,860	5,095,839	1914
1915	41	64,584	676,769	583,649	1,795,285	411,724	155,744	180,783	902,335	28,466	145,555	1,269,206	4,675,418	1915
1916	32	84,637	699,161	1,887	8,264	427,878	1,492,161	155,832	957,650	37,030	280,708	707,278	3,437,944	1916
1917	45	411,538	5,366,218	1,124,884	7,823,960	216,285	1,362,634	114,276	1,065,983	57,543	540,904	1,921,554	16,159,699	1917
1918	32	50,723	781,992	6,605	53,336	267,538	1,715,159	235,860	2,532,553	63,472	754,637	624,198	5,837,677	1918
1919	35	64,346	1,186,413	421,215	3,854,113	525,541	1,687,787	210,883	2,618,504	73,618	910,968	1,295,626	12,257,785	1919
1920	11	62,654	1,725,252	4,669	28,860	48,849	3,225,368	24,502	221,688	25,846	370,215	166,520	2,571,385	1920
1921	23	102,967	1,991,368	404,713	1,870,385	30,831	123,608	89,412	798,541	25,567	199,609	653,490	4,983,511	1921
1922	16	48,566	945,178	2,225	13,273	65,552	283,395	111,771	744,656	20,615	222,641	248,729	2,209,143	1922
1923	18	47,402	860,000	475,849	2,429,800	97,081	471,790	122,000	785,000	15,806	150,407	758,138	4,696,997	1923
1924	12	69,369	1,182,358	5,945	39,192	134,360	651,014	87,879	688,950	20,096	216,043	317,649	2,777,557	1924
1925	23	112,023	2,098,683	553,904	3,179,302	43,345	207,546	173,215	1,902,289	29,183	432,349	911,670	7,820,169	1925
1926	14	44,673	532,408	2,107	15,095	112,204	573,411	123,469	1,163,286	27,972	365,826	310,425	2,650,026	1926
1927	21	97,594	2,115,410	578,923	3,669,941	38,129	225,654	135,802	1,358,020	41,796	588,314	892,244	7,957,339	1927
1928	14	60,081	1,207,981	5,597	41,091	146,356	833,114	89,923	777,472	23,419	294,816	325,376	3,154,024	1928
1929	22	111,898	2,203,496	727,621	4,639,076	156,683	911,584	101,635	1,044,372	34,007	439,778	1,131,844	9,238,306	1929
1930	12	352,194	4,890,921	3,712	18,486	64,234	237,123	122,691	1,240,876	29,775	407,912	572,606	6,795,318	1930
1931	18	83,728	1,316,348	705,580	2,486,377	55,189	177,000	76,025	569,699	28,359	293,022	948,881	4,842,446	1931
1932	10	78,319	897,006	1,677	5,779	146,151	381,116	60,740	330,385	24,024	168,625	310,911	1,782,912	1932
1933	19	125,738	1,340,000	543,340	2,643,528	37,039	171,742	44,568	292,684	21,091	221,776	771,776	4,669,910	1933
1934	21	340,787	3,632,587	3,296	17,331	72,841	251,991	69,080	517,901	14,089	74,024	500,093	4,493,834	1934
1935	14	51,714	720,076	369,620	1,652,161	15,636	68,402	70,514	534,956	9,243	91,396	516,727	3,066,991	1935
1936	9	60,063	813,510	1,152	7,598	86,070	315,465	30,568	292,528	4,708	43,427	182,561	1,472,528	1936
1937	13	56,983	925,160	327,973	1,676,692	18,759	91,696	31,747	323,976	6,412	76,750	441,874	3,094,274	1937
1938	13	139,152	1,824,396	455	2,641	7,697	32,193	10,268	100,753	2,371	36,800	159,943	1,996,783	1938
1939	14	43,561	669,202	282,271	1,574,317	15,080	76,786	54,905	485,760	2,446	33,508	398,263	2,839,573	1939
1940	9	62,748	1,122,684	2,947	17,432	23,405	114,798	30,654	231,878	1,674	15,734	121,428	1,502,526	1940
1941	9	110,758	2,140,457	153,924	1,203,657	25,423	187,224	46,213	553,230	4,769	62,354	341,087	4,146,922	1941
1942	10	258,488	5,255,888	851	7,965	2,223	17,748	6,862	97,693	1,204	26,389	269,628	5,405,683	1942
1943	10	19,149	424,339	62,129	637,730	243	2,432	26,292	390,847	2,864	12,456	110,677	1,467,804	1943
1944	3	37,214	830,719	299	3,313	. . .	. . .	373	5,883	1,064	21,240	38,950	861,155	1944
1945	6	53,532	1,176,467	305,245	2,724,176	1,184	12,467	18,802	258,076	3,639	63,511	382,402	4,234,697	1945
1946	20	271,311	10,108,350	91	2,184	47,099	989,079	7,118	163,714	6,841	268,120	332,460	11,531,447	1946
1947	25	7,516	315,956	639,426	13,423,416	139,131	2,532,194	79,450	2,254,404	29,143	875,098	894,666	19,401,068	1947
1948	22	91,268	5,005,792	4,645	128,328	245,133	5,558,820	70,659	2,049,606	27,043	903,578	438,748	13,646,124	1948
1949	23	94,627	2,959,425	557,740	9,305,100	162,532	2,381,000	55,910	1,273,000	8,594	224,000	879,403	16,142,525	1949
1950	20	128,385	4,984,208	2,277	61,855	512,997	10,752,172	116,655	3,454,279	8,215	191,712	768,529	19,444,226	1950
1951	25	156,461	5,815,837	441,605	9,419,295	233,468	3,922,457	88,511	2,200,801	11,275	281,794	931,320	21,640,184	1951
1952	20	114,707	5,153,778	817	51,026	292,318	5,147,662	172,910	4,079,424	7,869	178,654	588,621	14,610,544	1952
1953	22	164,848	6,041,592	440,860	8,239,810	144,542	1,761,160	54,901	1,012,224	3,974	106,937	809,125	17,161,723	1953
1954	21	507,719	16,364,291	1,429	32,314	272,455	4,292,256	29,252	742,533	5,054	119,568	815,909	21,550,962	1954
1955	23	81,913	3,088,120	411,280	9,108,207	88,672	1,745,505	63,526	1,886,722	10,177	253,698	655,568	16,082,252	1955
1956	15	70,285	2,865,168	320	7,382	47,068	987,721	59,481	1,836,178	3,582	100,475	180,736	5,796,924	1956
1957	20	189,406	7,750,894	228,930	5,426,423	88,623	1,615,502	87,339	2,486,215	6,497	186,205	600,795	17,465,239	1957
1958	19	415,645	16,299,811	2,374	51,853	145,715	2,397,298	38,351	1,190,264	2,106	66,327	604,191	20,005,553	1958
1959	23	134,739	6,467,272	184,448	4,426,752	156,074	3,277,554	76,377	2,673,195	10,221	327,072	561,859	17,171,845	1959
1960	21	109,200	5,956,850	2,190	66,470	40,303	994,476	3,129	105,504	1,009	39,040	155,831	7,162,340	1960
Aver.	21	195,962	7,580,361	171,425	3,682,953	150,924	2,614,159	67,378	1,821,306	6,176	165,977	590,396	15,864,757	Aver.

NOTE: Figures for the last year in this table are from "PACIFIC FISHERMAN's" compilation. Those for previous years have been revised from official data. "Average" is for the last ten years.

ka led a number of the seiners from that area to abandon it early and head south to Puget Sound, only to meet further disappointment there.

- The vagaries of the Puget Sound-Fraser River salmon runs in the past decade were continued in 1960. The Sockeye in that year, for example, averaged smaller than in any year in the 44 for which there are data. The average weight of four-year fish was 5.2 lbs., against a year-to-year average of 6.0 lbs. for this type of Sockeye.

The Sockeye run, expected to be early, actually was late; and was about 25% above forecast.

- Looking to 1961, the scientists of the International Pacific Salmon Fisheries Commission, which controls the Sockeye and Pink salmon fishery to the Fraser River, and some adjacent streams in the case of Pinks, are not at all sanguine.

The downstream migration of young Sockeye due to return in 1961 was prodigious, but it entered salt water under adverse conditions and subsequent indexes all tended to indicate excessive marine mortality.

Accordingly, the scientific staff forecast a returning Fraser River Sockeye run in 1961 of 5 million fish, of which an escapement of 1.5 million would be required, leaving 4 million fish to be divided equally between the fishermen of Canada and the United States. This should provide a pack of from 165,000 to 170,000 cases for each country.

Pink salmon run to the Fraser in 1961 is forecast at 5 million fish, of which half will be required for escapement, leaving about 1.25 million for each country. It should be emphasized that the total Pink production of Puget Sound and Southern British Columbia also will include some Pinks native to streams other than those of the Fraser system, and taken outside of treaty waters. In short, the forecast of the commission's staff relates only to Pinks taken in treaty waters and not to the substantial number taken in waters adjoining those whose fishery is subject to international control.

This also applies to Sockeyes, save that there are no runs of significance in this region save to the Fraser system.

Fraser River-Puget Sound Sockeye Pack, by Cycles

British Columbia	1895-	395,984	1896-	356,984	1897-	860,459	1898-	256,101	British Columbia
Washington		65,143		72,979		312,048		252,000	Washington
TOTAL		461,127		429,963		1,172,507		508,101	TOTAL
British Columbia	1899-	480,485	1900-	229,800	1901-	928,669	1902-	293,477	British Columbia
Washington		499,646		228,704		1,105,096		339,556	Washington
TOTAL		980,131		458,504		2,033,765		633.033	TOTAL
British Columbia	1903-	204,809	1904-	72,688	1905-	837,489	1906-	183,007	British Columbia
Washington		167,211		123,419		837,122		182,241	Washington
TOTAL		372,020		196,107		1,674,611		365,248	TOTAL
British Columbia	1907-	59,815	1908-	74,574	1909-	585,435	1910-	150,432	British Columbia
Washington		96,974		170,951		1,097,904		248,014	Washington
TOTAL		156,789		245,525		1,683,339		398,446	TOTAL
British Columbia	1911-	58,487	1912-	123,879	1913-	719,796	1914-	198,183	British Columbia
Washington		127,761		184,680		1,673,099		335,230	Washington
TOTAL		186,248		308,559		2,392,895		533,413	TOTAL
British Columbia	1915-	91,130	1916-	32,146	1917-	148,164	1918-	19,697	British Columbia
Washington		64,584		84,637		411,538		50,723	Washington
TOTAL		155,714		116,783		559,702		70,420	TOTAL
British Columbia	1919-	38,854	1920-	48,399	1921-	39,631	1922-	51,832	British Columbia
Washington		64,346		62,654		102,967		48,566	Washington
TOTAL		103.200		111,053		142,598		100,398	TOTAL
British Columbia	1923-	31,655	1924-	39,743	1925-	35,385	1926-	85,689	British Columbia
Washington		47,402		69,369		112,023		44,673	Washington
TOTAL		79,057		109,112		147,408		130,362	TOTAL
British Columbia	1927-	61,393	1928-	29,299	1929-	61,569	1930-	103,692	British Columbia
Washington		97,594		61,044		111,898		352,194	Washington
TOTAL		158,987		90,343		173,467		455,886	TOTAL
British Columbia	1931-	40,947	1932-	65,769	1933-	52,465	1934-	139,238	British Columbia
Washington		87,211		81,188		126,604		352,579	Washington
TOTAL		128,158		146,957		179,069		491,817	TOTAL
British Columbia	1935-	62,822	1936-	184,854	1937-	100,272	1938-	186,794	British Columbia
Washington		54,677		59.505		60.259		134,641	Washington
TOTAL		117,499		244,359		160,531		321,435	TOTAL
British Columbia	1939-	54,296	1940-	99,009	1941-	171,290	1942-	446,371	British Columbia
Washington		43,511		59,354		110,605		263,458	Washington
TOTAL		97,807		158,363		281,895		709,829	TOTAL
British Columbia	1943-	31,973	1944-	88,515	1945-	79,781½	1946-	331,292	British Columbia
Washington		19,179		37,509		53,054½		280,018	Washington
TOTAL		51,152		126,024		132,836		611,310	TOTAL
British Columbia	1947-	27,857	1948-	61,650	1949-	80,629	1950-	81,510	British Columbia
Washington		7,516		90,441		80,547		116,458	Washington
TOTAL		35,373		152,091		161,176		197,968	TOTAL
British Columbia	1951-	134,400	1952-	115.814	1953-	176.097	1954-	486,805	British Columbia
Washington		118,151		114,638		178,323		501,496	Washington
TOTAL		252,551		230.452		354,420		988,301	TOTAL
British Columbia	1955-	95,377	1956-	84,296	1957-	99,398	1958-	418,704	British Columbia
Washington		85,136		84,052		119,985		450,066	Washington
TOTAL		180,513		168,348		219,383		868,770	TOTAL
British Columbia	1959-	123,248	*1960-	97,000					British Columbia
Washington		135,489		90,000					Washington
TOTAL		258,737		187,000					TOTAL

*Figures for 1960 are approximate. Statistics represent 48-lb. cases of Sockeyes caught in the Fraser River district of British Columbia and adjacent waters of the State of Washington, whether canned in those districts or elsewhere -- and not including other Sockeye canned in those districts. This accounts in large part for the discrepancy between these statistics and those appearing elsewhere in this issue.

Columbia River

• Adverse escapement conditions to the upper Columbia River spawning areas in 1960 are indicated by the fishway counts at the Bonneville, The Dalles and McNary Dams; which also reveal the decline in migrating population, due to diversion into tributaries or to mortality from one cause or another, in the segments of the main stem of the Columbia between dams.

At Bonneville the 1960 count was the third lowest since counting salmon was begun there in 1938. Only in 1944 and 1945 was the tally less.

In 1960 there were 435,416 salmon using the Bonneville fish ladders while in 1945 there were 428,631 and in 1944, 361,516. Species composition of the 1960 count was — 256,049 Chinook, 113,859 Steelhead, 61,214 Blue-

1960-COLUMBIA RIVER CANNED SALMON PACK

COMPANY	LOCATION	CHINOOK							SILVERSIDE			BLUEBACK			CHUMS			STEELHEAD TROUT			GRAND TOTAL (Full cases)
		Fancy				Other Grades															
		1 lb. Flats & Ovals	1/2 lb. Flats & Ovals	1/4 lb. Flats & Ovals	Total	1/2 lb. Flats & Ovals	1/4 lb. Flats & Ovals	Total	1/2 lb. Flats & Ovals	1/4 lb. Flats & Ovals	Total	1/2 lb. Flats & Ovals	1/4 lb. Flats & Ovals	Total	1 lb. Talls	1/2 lb. Flats & Ovals	Total	1/2 lb. Flats & Ovals	1/4 lb. Flats & Ovals	Total	
Barbey Packing Co.	Astoria, Ore.	---	3,652	---	3,652	2,483	---	2,483	---	---	---	717	---	717	---	---	---	701	---	701	7,553
Chinook Packing Co.	Chinook, Wash.	---	1,317	---	1,317	1,826	---	1,826	613	405	1,018	511	108	619	1,296	---	1,296	---	---	---	6,076
Columbia River Packers Assn.	Astoria, Ore.	---	11,433	5,535	16,968	4,692	1,081	5,773	---	1,866	1,866	285	2,813	3,098	---	1,398	1,398	---	---	---	29,103
Cowlitz Fish Co.	Kelso, Wash.	---	175	251	426	1,009	124	1,133	287	52	339	18	144	162	---	40	40	---	---	---	2,100
Point Adams Packing Co.	Hammond, Ore.	275	3,069	448	3,792	1,438	48	1,486	96	1,251	1,347	529	896	1,425	933	72	1,005	665	1,288	1,953	11,008
Portland Fish Co.	Portland, Ore.	---	1,641*	---	1,641	255	---	255	128	20	148	1	307	308	---	190	190	---	3	3	2,545
New England Fish Co.	Chinook, Wash.	---	2,221	---	2,221	192	---	192	---	32	32	636	---	636	---	---	---	---	---	---	3,081
Union Fishermen's Co-op Pkg. Co.	Astoria, Ore.	675	1,516	2,938	5,129	4,552	24	4,576	352	40	392	---	1,089	1,089	---	---	---	---	74	74	11,260
TOTAL		950	25,024	9,172	35,146	16,447	1,277	17,724	1,476	3,666	5,142	2,697	5,357	8,054	2,229	1,700	3,929	1,366	1,365	2,731	72,726

*Includes 51 Ovals

BONNEVILLE DAM SALMON ESCAPEMENT

Year	Chinook	Steelhead	Silver	Blueback	Chum	Total	Year
1938	271,799	107,003	15,185	75,040	2,117	471,144	1938
1939	286,216	121,922	14,382	73,382	1,168	497,070	1939
1940	391,588	185,161	11,917	148,805	1,729	739,200	1940
1941	461,458	118,087	17,911	65,745	5,270	668,471	1941
1942	403,938	151,345	12,401	55,475	1,865	625,024	1942
1943	313,123	92,131	2,547	39,845	790	448,436	1943
1944	240,763	100,521	4,208	15,071	954	361,517	1944
1945	297,488	120,144	791	9,501	727	428,651	1945
1946	445,743	142,548	3,897	74,354	1,178	667,720	1946
1947	480,376	135,434	11,174	171,139	202	798,325	1947
1948	419,555	139,062	4,081	131,541	3,636	697,875	1948
1949	277,697	119,285	1,004	51,444	2,028	451,458	1949
1950	357,375	114,079	10,153	77,993	1,069	560,669	1950
1951	331,788	140,689	5,201	169,428	1,051	648,157	1951
1952	420,879	260,990	7,768	184,654	1,505	875,796	1952
1953	332,479	223,915	13,018	235,219	1,728	806,359	1953
1954	320,945	176,254	4,062	130,107	1,569	632,937	1954
1955	359,853	198,417	3,725	237,748	318	800,061	1955
1956	300,915	131,109	6,120	156,418	684	595,246	1956
1957	403,869	139,194	4,775	82,915	569	631,322	1957
1958	426,420	131,441	3,673	122,389	456	684,379	1958
1959	345,028	129,026	2,695	86,560	928*	564,237	1959
1960	256,049	113,859	3,268	61,214	1,026	435,416	1960

*Includes 22 Humpbacks.

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Bumble Bee Brand Fancy Salmon
Bumble Bee Brand Chunk Light Tuna
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COLUMBIA RIVER PACKERS ASSN., INC., ASTORIA, ORE.

back, 3,268 Silver and 1,026 Chum.

At The Dalles Dam 1960 was the poorest run since counting began there in 1957. The Dalles Dam tallied 370,632 salmon. In 1959 there were 452,553, in 1958, 536,850 and in 1957, 539,112.

The record year at Bonneville for salmon was 1952 when 875,796 salmon passed.

The Dalles salmon 1960 total consisted of 196,962 Chinook, 111,189 Steelhead, 59,441 Blueback, 3,000 Silver, 35 Chum and five Pink. In 1959 The Dalles counts were 207,641 Chinook, 86,259 Blueback, 2,709 Silver, 25 Chum, 156,090 Steelhead and nine Pink.

At McNary Dam the 1960 total was 330,614 Salmon, compared with 367,912 in 1959. Only two years have been lower at McNary since counting began there in 1954, when there were 310,746 salmon tallied, and in 1956, 259,724.

McNary's 1960 total salmon count consisted of 176,767 Chinook, 55,372 Blueback, 1,580 Silver and 96,895 Steelhead. In 1959 at McNary there were 171,490 Chinook, 83,977 Blueback, 110,475 Steelhead and 1,970 Silver. The best year was 1957 when 486,739 salmon were counted.

COLUMBIA RIVER CANNED SALMON PACK

Salmon canning on the Columbia River commenced in 1866, with a pack of about 4,000 cases valued at $64,000; but no segregation by species is available prior to 1889. Production increased rapidly to a peak of 629,400 cases in 1883, valued at $3,147,000; then fell to 356,000, valued at $2,124,000, in 1887, the average output for intervening years being 351,091 cases, valued at $2,066,227.

YEAR	# of Can-neries	CHINOOK		BLUEBACK		SILVERSIDE		CHUM or KETA		STEELHEAD TROUT		TOTAL		YEAR
		Cases	Value	Cases	Value	Cases	Value	Cases	Value	Cases	Value	Cases	Value	
1888	28	...	...	...	...	...	...	...	...	...	...	372,477	$2,234,862	1888
1889	21	266,697	$1,600,182	17,797	$101,051	...	...	...	...	25,391	$108,587	309,885	1,809,820	1889
1890	21	335,604	1,946,087	57,345	290,069	...	...	...	...	42,825	171,300	435,774	2,407,456	1890
1891	22	353,907	2,038,566	15,482	284,242	...	...	...	...	29,564	118,156	398,953	2,440,964	1891
1892	24	344,267	1,996,388	66,547	372,909	4,176	$20,880	...	...	72,348	288,892	487,338	2,679,069	1892
1893	24	288,773	1,559,374	30,459	152,295	29,107	116,428	2,311	$6,933	65,226	260,904	415,876	2,095,934	1893
1894	24	351,106	1,896,976	43,814	224,430	42,758	171,032	...	...	52,422	209,688	490,100	2,501,126	1894
1895	24	444,909	2,428,658	18,015	86,523	99,601	329,683	22,493	62,591	49,678	203,542	634,696	3,110,997	1895
1896	24	370,943	1,804,511	16,983	81,518	44,108	141,145	...	...	49,663	198,652	481,697	2,261,826	1896
1897	22	432,753	1,804,221	12,972	51,888	60,850	197,762	...	...	46,146	165,440	552,721	2,219,311	1897
1898	23	329,566	1,490,394	66,670	300,015	65,431	222,465	...	...	26,277	60,352	487,933	2,073,226	1898
1899	17	255,824	1,458,175	23,969	134,723	29,608	112,055	11,379	33,836	11,994	39,186	332,774	1,777,975	1899
1900	16	262,392	1,821,258	13,162	92,184	44,925	202,163	17,696	63,706	20,597	102,985	358,772	2,282,296	1900
1901	...	...	...	...	...	...	...	...	...	...	...	390,183	1,942,660	1901
1902	14	270,580	1,428,743	17,037	86,465	10,532	44,732	10,401	41,604	8,593	42,965	317,143	1,644,509	1902
1903	16	301,762	1,610,614	8,383	42,867	12,181	49,869	10,000	37,500	7,251	36,255	339,577	1,777,105	1903
1904	20	320,378	1,944,690	12,911	78,048	31,254	118,357	20,693	52,691	9,868	48,892	395,104	2,242,678	1904
1905	19	327,106	1,962,636	7,768	46,608	26,826	114,011	25,751	65,206	9,822	49,110	397,273	2,237,571	1905
1906	19	311,334	1,868,007	7,816	54,712	41,446	124,338	27,802	69,505	6,500	32,500	394,898	2,149,062	1906
1907	19	258,433	...	5,504	...	31,757	...	22,556	...	5,921	...	324,171	1,763,490	1907
1908	14	210,096	...	8,581	...	31,432	...	16,884	...	10,726	...	253,341	1,380,708	1908
1909	15	162,131	1,203,546	27,908	214,561	42,178	185,070	24,542	57,115	17,283	99,796	274,087	1,760,088	1909
1910	15	244,285	1,882,137	6,234	34,287	68,922	363,688	66,538	232,883	5,436	31,203	391,415	2,544,198	1910
1911	15	405,862	2,204,185	5,988	47,904	79,416	549,478	53,471	203,198	8,594	47,399	543,331	3,052,164	1911
1912	15	220,317	1,988,526	8,210	85,384	31,842	177,248	18,699	46,590	6,958	22,108	285,666	2,319,856	1912
1913	15	192,116	1,664,670	11,152	93,677	40,969	175,412	13,303	29,486	8,939	49,142	266,479	2,012,387	1913
1914	17	289,464	2,573,502	35,311	376,924	69,769	380,666	49,285	205,541	10,792	59,356	454,621	3,595,989	1914
1915	19	406,486	3,694,361	5,459	56,707	33,336	173,234	86,530	251,632	26,723	129,358	558,534	4,305,292	1915
1916	20	395,166	3,572,203	3,790	27,288	52,084	335,114	77,766	307,483	18,999	118,987	547,805	4,361,075	1916
1917	20	403,637	5,023,529	7,968	111,552	64,299	700,680	53,659	386,596	23,783	292,538	555,218	6,530,939	1917
1918	20	400,952	5,222,983	37,833	605,328	98,145	1,072,843	29,846	215,669	24,605	350,071	591,381	7,466,924	1918
1919	21	392,125	5,455,550	7,268	145,360	90,728	1,142,767	75,493	541,989	14,414	205,254	580,028	7,490,920	1919
1920	22	420,467	5,661,580	2,617	62,808	27,024	257,806	18,792	99,564	12,645	116,859	481,545	6,198,617	1920
1921	20	267,582	3,761,321	6,045	120,900	34,381	233,372	4,821	19,791	10,142	68,266	323,241	4,203,649	1921
1922	23	237,230	3,724,393	30,743	614,860	90,437	633,935	8,844	47,130	24,920	186,675	392,174	5,206,993	1922
1923	23	289,586	4,967,657	38,309	766,180	101,554	673,954	25,508	135,168	25,968	187,965	480,925	6,730,924	1923
1924	22	293,716	4,508,236	7,366	129,840	112,308	992,865	57,748	303,356	29,734	285,107	500,872	6,219,404	1924
1925	21	250,809	5,423,129	5,650	106,220	113,554	1,488,855	55,812	272,398	14,637	177,866	540,452	7,468,468	1925
1926	21	295,302	4,744,131	21,736	434,720	97,142	1,027,597	32,853	181,216	32,690	356,418	479,723	6,744,064	1926
1927	22	339,446	5,559,202	6,887	147,378	74,879	585,816	68,449	425,240	30,148	311,070	519,809	7,028,705	1927
1928	24	251,404	4,355,218	4,814	100,131	49,136	478,355	124,953	747,619	16,339	222,139	446,646	5,903,462	1928
1929	21	242,938	4,234,214	10,072	181,296	90,684	917,561	54,619	314,928	23,804	257,025	422,117	5,905,024	1929
1930	21	281,346	4,092,810	9,823	194,460	110,430	1,156,042	11,371	43,324	16,535	171,541	429,505	5,658,177	1930
1931	20	294,798	3,754,929	4,125	66,000	39,268	247,878	3,518	11,754	11,990	110,429	353,699	4,191,000	1931
1932	15	216,511	2,023,390	2,795	33,540	46,492	280,853	17,261	44,879	13,132	91,924	296,191	2,474,586	1932
1933	14	251,157	2,719,303	6,921	96,894	36,430	263,190	24,398	107,351	17,805	142,440	336,711	3,329,178	1933
1934	13	251,068	2,630,152	6,869	82,428	65,428	536,731	24,455	92,608	14,901	121,000	362,721	3,462,919	1934
1935	10	205,870	2,479,450	1,302	17,619	95,184	725,868	15,495	59,499	14,888	122,846	332,739	3,405,282	1935
1936	11	220,188	2,964,058	9,837	137,718	36,541	303,263	30,597	110,149	19,282	317,867	316,445	3,833,055	1936
1937	11	291,343	4,256,819	7,526	126,436	69,801	725,996	30,592	138,309	17,568	189,734	416,830	5,437,294	1937
1938	10	173,892	2,707,267	13,889	260,369	67,257	630,364	37,704	143,275	15,248	152,480	307,990	3,893,755	1938
1939	10	207,595	3,336,206	5,301	102,359	69,082	730,549	15,201	75,416	25,293	320,025	322,472	4,666,141	1939
1940	11	244,570	3,785,681	23,974	471,530	59,737	623,681	25,282	125,420	33,436	373,514	386,999	5,379,826	1940
1941	11	328,609	5,558,254	33,070	661,400	35,727	481,834	83,144	572,994	33,162	453,502	513,712	7,727,984	1941
1942	12	274,750	5,692,929	23,256	625,230	26,541	497,070	118,051	911,538	21,803	429,678	464,401	8,156,445	1942
1943	11	130,373	3,094,505	2,880	77,586	5,707	61,065	12,439	112,421	16,261	323,874	167,660	3,669,451	1943
1944	10	163,047	3,714,591	758	20,342	12,210	137,072	1,525	11,590	19,222	375,838	196,762	4,259,433	1944
1945	8	132,014	3,095,228	112	3,001	22,154	244,060	1,032	8,848	19,314	363,068	*175,670	3,723,456	1945
1946	11	159,872	5,940,740	9,726	369,588	6,883	206,490	§15,617	247,392	17,373	510,720	§209,471	7,274,939	1946
1947	10	250,318	8,613,000	15,079	664,000	42,789	1,278,000	17,121	252,000	21,999	650,000	347,306	11,457,000	1947
1948	12	235,310	9,342,000	3,339	147,000	39,425	1,099,000	26,201	498,000	19,977	615,000	324,242	11,701,000	1948
1949	12	133,347	3,682,000	**6,630	225,000	16,740	415,000	12,386	186,000	9,019	221,000	178,122	4,729,000	1949
1950	11	136,635	4,964,201	3,630	146,687	29,507	939,296	12,952	234,457	10,266	360,830	192,990	6,645,471	1950
1951	10	143,046	5,497,305	4,552	186,543	29,099	841,234	11,566	192,850	14,862	469,615	203,125	7,187,547	1951
1952	9	95,353	3,506,181	9,824	413,774	29,701	875,380	13,759	214,837	18,979	612,987	167,616	5,623,159	1952
1953	8	97,320	3,267,303	3,014	127,791	24,219	676,237	9,775	130,062	19,420	616,621	153,199	4,823,332	1953
1954	8	71,993	2,550,257	8,485	336,212	12,670	367,000	12,530	190,484	13,379	458,303	119,057	3,902,256	1954
1955	8	117,782	4,392,455	3,010	131,890	20,254	667,659	*6,774	126,875	13,737	462,857	*161,557	5,781,736	1955
1956	8	112,076	4,328,650	19,346	845,066	22,031	656,182	***5,497	130,233	8,171	295,294	167,121	6,255,425	1956
1957	8	87,420	3,738,912	8,496	470,061	28,725	1,024,847	§5,770	121,542	7,605	287,028	138,016	5,642,390	1957
1958	7	82,786	3,714,465	44,129	2,144,087	9,917	370,072	6,113	109,862	6,313	229,786	149,258	6,568,272	1958
1959	10	70,149	2,942,503	17,069	823,850	14,931	586,739	6,250	127,751	9,847	356,835	118,246	4,837,678	1959
1960	8	52,870	2,464,576	8,054	429,522	5,142	229,385	3,929	86,438	2,731	122,890	72,726	3,332,811	1960
Aver.	8	93,080	3,640,261	12,598	590,880	19,669	629,474	8,197	143,093	11,504	391,222	144,992	5,394,930	Aver.

NOTES: "Average" is for the last ten years. Figures for the last year in this table are from PACIFIC FISHERMAN's compilation. Those for previous years have been revised from official data. *Includes 1,044 cases of Pinks canned from Puget Sound Fish. **Mostly Quinault River Bluebacks. ***Includes 588 cases of Pinks. §Includes 860 cases of Pinks.

CANNED SALMON PACK OF COASTAL AREAS

Year	WASHINGTON					OREGON				California	GRAND TOTAL Full Cases	Year
	Blueback	Chinook	Silver & Steelhead	Chum & Pink	Total Full Cases	Chinook	Silver & Steelhead	Chum	Total Full Cases	TOTAL Full Cases		
1919	1,244	5,029	17,174	39,995	63,442	26,089	43,114	7,081	76,284	22,766	162,492	1919
1920	235	921	405	26	1,587	30,571	4,490	...	35,061	21,055	57,703	1920
1921	2,590	2,010	4,897	5,281	14,778	15,632	122	...	15,754	10,376	40,908	1921
1922	26,491	2,573	13,354	10,939	53,357	12,270	11,769	2,248	26,287	9,700	89,344	1922
1923	10,454	1,794	5,172	38,523	55,943	10,526	22,606	14,279	47,411	6,000	109,354	1923
1924	6,778	1,506	5,493	32,760	46,537	16,351	30,449	14,603	61,403	12,936	120,876	1924
1925	4,821	3,810	6,679	35,342	53,276	22,404	18,872	14,410	55,686	22,339	131,301	1925
1926	2,720	2,441	3,182	17,377	25,720	19,130	7,033	4,838	31,001	11,537	68,258	1926
1927	5,260	4,195	1,983	25,452	36,890	17,456	13,390	181	48,619	15,585	101,094	1927
1928	2,000	52	415	34,109	37,031	5,411	8,136	5,500	19,047	4,237	60,515	1928
1929	4,449	213	1,158	35,699	41,519	4,700	2,313	8,047	15,060	2,774	59,353	1929
1930	21,536	49	2,160	11,846	35,519	11,252	981	...	12,233	5,171	52,995	1930
1931	8.476	61	501	11,225	20,263	4,234	...	8,600	12,834	12,280	45,377	1931
1932	14,263	308	1,152	22,236	37,959	8,524	...	...	8,524	780	47,263	1932
1933	6,754	845	424	7,735	15,758	7,150	...	500	7,650	2,149	25,557	1933
1934	3,323	2,344	1,453	15,370	22,490	4,100	..	2,000	6,100	820	29,410	1934
1935	6,217	3,685	10,009	7,351	27,262	2,500	...	2,400	4,900	874	33,036	1935
1936	705	1,137	1,883	16,038	19,763	...	...	9,500	9,500	....	29,263	1936
1937	2,865	176	82	7,932	11,055	2,400	...	...	2,400	147	13,602	1937
1938	1,559	...	...	13,173	14,732	...	...	...	...	...	14,732	1938
1939	...	...	...	6,381	6,381	...	...	2,200	2,200	...	8,581	1939
1940	138	23	504	9,142	9,807	647	643	1,000	2,290	...	12,097	1940
1941	24	...	...	27,428	27,452	1,000	2,500	5,400	8,900	1,125	37,477	1941
1942	1,235	...	...	17,492	18,727	1,450	200	9,000	10,650	...	29,377	1942
1943	...	100	402	5	507	1,038	...	...	1,038	767	2,312	1943
1944	...	750	161	132	1,043	1,961	2,567	...	4,528	864	6,435	1944
1945	...	4,005	2,096	5,287	11,388	...	...	...	...	2,755	14,143	1945
1946	3,694	2,398	5,185	17,225	28,502	16,104	4,806	663	21,573	5,034	55,109	1946
1947	12,450	3,014	13,023	10,060	38,547	7,383	8,379	...	15,762	13,917	68,226	1947
1948	4,021	1,805	12,060	8,642	26,528	7,553	7,052	...	14,605	11,681	52,814	1948
1949	7,577	419	3,856	6,285	18,137	827	55	...	882	...	19,019	1949
1950	3,969	2,755	8,034	12,902	27,660	3,190	4,817	...	8,007	1,801	35,667	1950
1951	2,643	1,495	4,161	12,597	20,896	500	50	...	550	707	22,153	1951
1952	877	1,807	5,267	15,000	22,951	184	1,011	...	1,195	2,042	26,188	1952
1953	455	642	320	11,141	12,558	...	...	...	...	436	12,994	1953
1954	4,240	5	58	11,755	16,058	...	...	...	...	2,162	18,520	1954
1955	2,798	784	442	7,667	11,691	...	...	...	...	847	12,538	1955
1956	5,076	2,637	163	2,389	10,265	...	...	...	...	694	21,524	1956
1957	2,634	165	199	1,194	4,192	...	...	...	...	2,174	6,366	1957
1958	837	755	440	5,182	7,214	...	...	...	...	1,005	8,219	1958
1959	575	637	1,004	4,878	7,094	...	120	...	120	...	14,308	1959
1960	800	200	...	1,000	2,000	...	...	...	...	...	2,000	1960
Average	2,094	912	1,205	7,280	11,491	68	118	1	186	1,007	14,481	Average

NOTE: All figures indicate "Full Cases" on a common basis of 48 lbs. net, equivalent to 96 Halves or 192 Quarters. For some years a few Puget Sound Pinks are included with Chums in the Washington Coast pack. A few Steelheads are sometimes canned in these areas. Where they occur, they are included with Silvers. The California pack consists almost entirely of Chinooks, but sometimes includes a few Silvers. "Average" is for the last ten years.

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SALMON — TUNA — CRABMEAT

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This rugged, adventurous-looking fisherman is the highly memorable trademark now on all our new Star-Kist Tuna labels.

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- Star-Kist Chunk White Tuna
- Star-Kist Solid White Tuna
- Star-Kist Dietetic Pack Tuna

- Star-Kist Frozen Tuna Pie
- Star-Kist Frozen Tuna Casserole
- Star-Kist Frozen Rock Lobster Tails
- Star-Kist Frozen Lobster Newburg

Star-Kist Foods, inc.

TERMINAL ISLAND, CALIFORNIA / J. J. Bogdanovich, President

TUNA

● Topping 15.2 million cases, American tuna canning in 1960 continued its long, steady climb as the No. 1 growth element in the world's fish business.

The year was one of world-wide expansion in tuna, with three aspects particularly notable:

1. Remarkable growth in the productivity of tuna seining, with a resultant revolution which converted most of the California clipper fleet to net fishing. Greater productivity was reflected in lower costs, these in turn bringing about increased dependence of the canners on domestic fish.
2. Spectacular development of the Atlantic tuna fisheries, pioneered by the French, and greatly expanded by the Japanese. In 1960 the United States increased its interest in the Atlantic source, with two companies establishing bases in Africa. Late in the year the Norwegians —always good fishermen—took a hand in the East Atlantic tuna game.
3. Puerto Rico, strategically situated in the geography of world tuna development, came to new prominence in the industry with a second great tuna cannery—Star-Kist Caribe, Inc.—on stream; and yet another announced by the world's largest canner—California Packing Corporation.

● Year 1960 saw the greatest changes ever to take place in any one year in the history of the California-based tuna fishery; changes which point to even greater ones that may come in 1961, or beyond.

During 1960, the California fleet almost completed its conversion from bait-boat fishing to purse-seining for tuna. More than twice as much fish was delivered to California canneries by purse-seiners than by the few remaining tuna clippers or bait-boats. At the end of the year, according to one count, there were 67 converted seiners in business, with seven more conversions nearing completion in San Diego and Terminal Island shipyards.

During 1960, conversions were begun on the two biggest seiners ever to fish for tuna—*Western King* at Harbor Boat & Yacht Co., San Diego, and *Western Ace* at Harbor Boat Building Co., Terminal Island. These leviathans will carry around 600 tons of frozen fish in their holds.

At the same time, the efficiency and economy of tuna seining was indicated by the fact that two of the smallest clippers were converted to seiners—100-ton vessels, *Historic* and *Lusitania,* altered by San Diego Marine Construction.

During 1960, more than four times as much Yellowfin tuna (selling for approximately $250 a ton) as Skipjack (at $210 a ton) was delivered to canneries. Thus fishermen's loads were more profitable on a dollar-per-ton basis.

At the same time, trips were shorter. The seiners averaged around 30

1960 UNITED STATES TUNA PACK

REGION	Albacore Standard Cases	Lightmeat Tuna Standard Cases	TOTAL Standard Cases	REGION
California:				California:
San Diego	279,477	1,361,369	1,640,846	San Diego
Los Angeles Harbor	1,503,397	6,938,589	8,441,986	Los Angeles Harbor
San Francisco Area	144,557	483,066	627,623	San Francisco Area
TOTAL California	1,927,431	8,783,024	10,710,455	TOTAL California
Oregon, Washington, Hawaii	1,244,658	605,873	1,850,531	Oregon, Washington, Hawaii
Atlantic and Gulf Coasts, Puerto Rico & American Samoa	879,937	1,794,125	2,674,062	Atlantic and Gulf Coasts, Puerto Rico & American Samoa
GRAND TOTAL U.S. TUNA	4,052,026	11,183,022	15,235,048	GRAND TOTAL U.S. TUNA

NOTE: "Tuna-like fishes" - Bonito and Yellowtail formerly were included in this table, but have been eliminated in the 1960 report in line with official practice of the U.S. Bureau of Commercial Fisheries.

Chicken OF THE Sea® BRAND *

AMERICA'S MOST POPULAR BRAND IN THE SEA FOOD FIELD

Since 1914, Van Camp has packed and advertised only the finest sea food products. Little wonder then that today, their world-famous brands — Chicken of the Sea, White Star and Willapoint — are America's favorites — by far.

* *In the Pacific Northwest . . .*
it's WHITE STAR brand tuna

VAN CAMP SEA FOOD COMPANY, INC. · PORT OF LONG BEACH · CALIFORNIA

CALIFORNIA TUNA PACK BY MONTHS-1960

(Cases)

	Jan.	Feb.	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.	Total Cases "As they run"	Total Cases Basis 48-1/2s
ALBACORE														
Solid Pack	51,848	101,483	136,359	79,997	82,514	27,958	97,759	330,713	102,037	58,645	77,689	86,645	1,233,647	
Standard Pack	...	...	...	...	...	126	380	290	330	309	444	402	2,281	
Chunk Pack	42,044	44,387	53,676	37,562	18,912	3,917	12,988	104,594	59,168	59,939	44,079	26,789	508,055	
Grated & Flakes	13,585	16,260	20,498	13,171	14,358	3,877	13,654	62,038	22,872	12,838	14,445	11,572	219,168	
Dark & Light	...	243	1,646	1,428	1,777	179	...	...	...	116	455	409	6,253	
Unspecified	3,752	5,231	4,876	...	...	253	3,024	1,714	350	3,643	6,556	...	29,399	
Total Whitemeat	111,229	167,604	217,055	132,158	117,561	36,310	127,805	499,349	184,757	135,490	143,668	125,817	1,998,803	1,927,431
LIGHTMEAT														
Solid Pack	50,142	49,553	80,233	71,275	65,456	94,618	81,210	59,605	48,577	52,374	44,847	57,437	755,327	
Standard Pack	212	...	146	...	53	332	290	...	154	...	...	...	1,187	
Chunk Pack	425,323	573,293	779,725	657,831	692,663	853,688	775,610	486,218	490,136	534,806	402,776	630,306	7,302,375	
Grated & Flakes	55,979	71,365	90,028	80,679	76,402	98,565	67,326	68,902	46,672	49,044	41,724	48,436	795,122	
Dark & Light	4,575	2,063	995	4,877	3,720	7,803	6,555	2,859	4,041	6,529	4,241	10,121	58,379	
Tonno	5,321	11,469	22,601	12,808	20,360	19,751	11,334	12,305	12,547	13,826	3,242	10,322	155,886	
Unspecified	2,708	5,288	2,589	7,731	1,791	1,122	...	2,321	323	5,220	1,113	1,070	31,276	
Total Lightmeat	544,260	713,031	976,317	835,201	860,445	1,075,879	942,325	632,210	602,450	661,799	497,943	757,692	9,099,552	8,783,024
Total True Tuna	655,489	880,635	1,193,372	967,359	978,006	1,112,189	1,070,130	1,131,559	787,207	797,289	641,611	883,509	11,098,355	10,710,455
Bonito & Yellowtail														
Chunk Pack	831	...	...	...	...	187	783	2,332	402	144	916	...	5,595	
Grated & Flakes	...	...	...	137	...	569	...	1,127	532	231	1,048	1,500	5,144	
Total Tuna-Like	831	...	...	137	...	756	783	3,459	934	375	1,964	1,500	10,739	9,239
GRAND TOTAL	656,320	880,635	1,193,372	967,496	978,006	1,112,945	1,070,913	1,135,018	788,141	797,664	643,575	885,009	11,109,094	10,719,694

days per trip, whereas clippers in past years required closer to 60 days on the average. To sum up, tuna fishermen as a whole in 1960 delivered more tons of fish, got more money per ton, and worked fewer days to earn it.

The 1960 performance of the converted seiner fleet was the big factor in bringing the tuna fishery out of the financial bog into which it seemed to be sinking.

● Neither were the canners starving. U. S. consumption of canned tuna, stimulated by advertising and promotion that every year becomes more intense, increased by several percentage points faster than the population of the country. Estimates of the increase differ, but business was so good that one canner declared a 100% stock dividend during the year, and before December the split shares were selling for as much as the original stock.

The total California pack was estimated at 10,612,000 cases, just about 100,000 cases under the 1959 total. Of this total, the premium Albacore pack was 1,900,000 cases compared with 1,639,000 in 1959. This was the largest Albacore pack in three years.

● During 1960, the world's most modern tuna cannery was opened by Star-Kist at Mayaguez, Puerto Rico. This cannery, the only major tuna canning plant wholly built within the past several years, was a symbol of the development of the Atlantic aspect of the tuna industry.

Van Camp Sea Food Co. also has a cannery in Puerto Rico, at Ponce; and California Packing Corporation is to build another at Mayaguez. Van Camp and Star-Kist both have African establishments in Ghana and Sierra Leone; and both firms have sent big seiners to the African coast. As the year ended, the *Santa Helena,* top tuna boat in the entire California fleet, was being fitted with a "poop deck"

Deliveries of Tuna in California

(Pounds)

Year	Albacore	Bluefin	Bonito	Skipjack	Yellowfin	Shipments*		TOTAL
						Light Meat	White Meat	
1926	2,469,921	6,526,533	3,121,604	20,951,348	12,564,986			45,634,392
1927	4,579,367	4,898,386	1,718,008	33,805,960	25,934,045			70,935,766
1928	283,321	13,700,870	2,105,903	15,948,104	32,253,206			64,291,404
1929	269,101	7,796,857	2,918,544	27,007,013	37,444,924			75,166,439
1930	283,117	21,921,282	5,164,260	20,485,587	56,654,181			104,508,427
1931	37,322	3,534,030	3,079,673	16,506,761	36,579,480			59,737,266
1932	619,694	1,071,206	2,862,286	21,636,577	36,923,410			63,113,173
1933	487	560,492	2,252,199	16,687,308	51,075,630			70,576,116
1934	171,105	18,357,828	3,232,694	14,830,194	60,913,160			97,474,981
1935	2,447,528	25,173,083	7,896,484	17,197,186	72,294,133			125,008,414
1936	956,771	18,924,883	7,215,916	27,006,105	78,352,644			132,456,319
1937	3,196,770	12,693,922	7,808,070	47,104,092	91,522,458			162,325,312
1938	12,522,594	17,728,031	7,839,993	22,653,631	78,288,144			139,032,393
1939	12,346,858	11,835,715	9,918,875	30,120,891	110,417,801			174,640,140
1940	5,588,670	19,970,268	5,290,928	56,650,155	113,898,209			201,398,266
1941	3,276,257	9,519,012	10,257,602	25,585,468	76,701,760			125,340,099
1942	10,621,193	12,844,564	1,650,689	38,715,182	41,167,441			104,999,069
1943	21,384,864	10,178,170	2,281,884	28,893,784	49,261,328			117,004,030
1944	17,865,866	20,332,011	818,871	29,964,377	62,236,029	972,721**	2,535,547**	134,761,422
1945	21,767,581	20,594,059	2,714,181	33,273,407	86,130,656	1,392,078	60,901	165,932,863
1946	18,064,047	22,031,748	5,625,648	40,877,307	126,425,688	1,028,674	...	214,056,112
1947	13,145,780	20,837,634	13,697,171	52,315,449	149,066,794	1,539,245	269,397	250,871,470
1948	36,425,846	6,528,807	9,135,126	58,752,316	191,635,651	168,544	1,141,747	303,788,037
1949	44,017,014	4,389,471	1,829,541	78,564,030	184,972,285	691,199	254,664	314,718,204
1950	61,746,421	2,738,963	695,614	124,724,565	182,224,422	11,360,744	4,378,420	387,869,149
1951	30,677,931	3,862,418	776,803	115,778,923	160,547,928	16,018,444	17,520,891	345,183,338
1952	49,789,314	4,576,685	2,142,157	84,734,226	178,376,101	11,301,336	22,525,248	353,445,067
1953	33,834,626	9,172,855	3,102,647	122,306,183	132,086,346	16,888,789	46,186,816	363,578,262
1954	26,107,290	21,024,820	2,319,060	153,756,190	119,401,795	47,434,639	38,466,383	408,510,177
1955	29,001,811	13,609,177	136.990	101,837,635	122,291,864	60,072,312	44,844,675	371,794,464
1956	37,042,581	12,625,968	127,614	120,153,222	149,280,994	71,600,590	20,322,775	411,153,744
1957	43,466,941	20,312,596	219,031	90,498,163	136,955,837	67,174,436	39,564,027	398,191,031
1958	27,059,398	31,048,845	5,546,806	122,855,653	124,095,185	125,098,739	27,485,321	463,225,947
1959	32,729,279	15,194,290	3,007,285	98,481,407	108,369,847	153,117,132	29,741,982	440,641,222

*These are largely importations into California, but included are some fish caught by California fleet and landed outside of the United States.

**Shipments not available prior to 1944.

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American
Products

AMERICAN
TUNA CANNING CO.
Terminal Island, Calif.

CALIFORNIA PACK OF CANNED TUNA AND RELATED FISHES

(Cases)

YEAR	SAN PEDRO DISTRICT								SAN DIEGO DISTRICT								San Francisco & Monterey	GRAND TOTAL	YEAR
	Yellowfin	Bluefin	Skipjack	Albacore	Flakes	Tonno	Tunalike (Bonito & Yellowtail)	TOTAL	Yellowfin	Bluefin	Skipjack	Albacore	Flakes	Tonno	Tunalike (Bonito & Yellowtail)	TOTAL			
1926	122,968	67,525	189,581	43,660	11,786	90,689	47,710	573,919	96,363	2,758	85,389	14,555	4,162	40,864	15,416	259,507	. . . . .	833,426	1926
1927	185,423	40,363	155,755	105,598	7,816	197,275	26,660	718,890	200,635	9,645	226,420	20,481	435	10,221	20,147	487,984	. . . . .	1,206,874	1927
1928	323,813	85,994	64,061	99,093	7,577	106,038	14,759	701,335	287,770	46,348	130,430	658	9,156	11,783	9,798	495,943	. . . . .	1,197,278	1928
1929	199,292	67,091	128,436	130,212	7,707	88,454	49,943	671,135	458,687	22,637	218,696	2,426	10,906	31,351	13,027	757,730	. . . . .	1,428,865	1929
1930	262,278	302,660	82,282	143,748	11,508	57,110	73,049	932,635	739,616	6,944	185,848	1,783	18,053	17,875	17,635	987,754	. . . . .	1,920,389	1930
1931	182,115	46,462	166,091	144,796	12,850	35,514	37,289	625,117	431,229	. . .	112,307	177	6,591	706	3,006	554,016	. . . . .	1,179,133	1931
1932	275,263	8,510	101,626	52,215	11,517	42,247	34,348	525,726	403,050	177	203,381	. .	4,774	. . .	10,881	622,263	13,162	1,161,151	1932
1933	258,982	7,580	71,728	49,391	10,907	41,200	19,281	462,069	678,810	1	198,313	.	2,183	.	50,797	930,104	. . . . .	1,392,173	1933
1934	317,846	325,350	71,350	82,182	22,402	55,163	38,961	913,254	780,066	6,683	195,798	. . .	8,100	. . .	23,409	1,014,056	. . . . .	1,927,310	1934
1935	306,202	413,630	88,746	107,501	33,909	81,660	108,203	1,139,851	948,276	24,871	249,747	4,048	7,749	545	101,039	1,336,875	. . .	2,476,726	1935
1936	343,234	311,987	184,930	53,849	9,906	57,797	85,404	1,047,107	1,074,811	22,390	295,330	35	14,967	740	131,802	1,540,075	. . .	2,587,182	1936
1937	416,611	188,432	276,165	83,123	34,534	136,612	88,870	1,224,347	1,165,866	27,103	487,751	8,036	15,904	1,125	88,182	1,793,967	. . .	3,018,314	1937
1938	273,365	273,358	151,081	265,034	47,092	67,404	119,270	1,196,604	1,010,814	49,840	221,917	24,355	17,384	. . .	77,818	1,402,128	. . . . .	2,598,732	1938
1939	573,727	191,456	212,042	281,666	41,104	70,022	151,241	1,526,258	1,348,565	27,020	257,258	46,372	31,136	7,318	32,463	1,750,402	28,637	3,305,297	1939
1940	536,391	267,343	306,447	122,484	85,459	124,094	106,225	1,548,443	1,469,428	45,867	529,776	19,304	141,861	60,138	49,624	2,315,998	3,953	3,868,394	1940
1941	308,886	136,333	109,563	73,024	40,545	33,530	161,835	863,716	1,016,759	32,369	323,466	10,145	130,004	308	144,331	1,657,382	9,071	2,530,169	1941
1942	214,391	250,685	128,980	128,670	39,880	23,479	34,542	820,627	545,517	28,413	590,594	104,578	111,096	. .	35,138	1,415,336	6,257	2,242,220	1942
1943	303,881	162,844	88,203	187,052	120,548	17,239	96,595	976,362	392,114	12,021	294,964	227,347	381,967	. .	12,298	1,320,711	11,342	2,308,415	1943
1944	341,687	357,531	105,863	125,632	234,639	15,365	20,817	1,201,534	485,796	16,473	257,904	307,806	530,368	. . .	7,521	1,605,958	1,685	2,809,177	1944
1945	460,982	275,116	89,279	148,286	452,292	16,198	34,628	1,476,781	1,037,009	22,742	458,895	329,251	96,162	.	32,524	1,976,583	3,078	3,456,442	1945
1946	663,814	304,248	202,729	141,629	558,026	. . .	88,589	1,959,035	1,549,557	28,753	445,560	233,622	268,767	. . .	63,762	2,590,021	6,341	4,555,397	1946
1947	765,126	342,309	209,281	104,726	417,614	7,403	308,540	2,155,329	1,875,087	6,557	695,170	145,300	323,511	26,359	68,927	3,140,911	61,258	5,357,498	1947
1948	969,732	94,190	200,693	290,811	477,769	22,663	270,404	2,326,608	2,364,819	1,991	729,505	426,255	366,828	. .	39,420	3,964,818	55,526	6,346,952	1948
1949	614,847	38,142	157,373	289,063	1,330,358	78,821	49,195	2,557,799	2,059,468	2,889	904,793	535,013	420,491	4,038	24,884	3,951,576	81,021	6,590,396	1949
1950	742,815	14,786	266,809	586,683	2,456,705	202,368	14,595	4,284,761	913,458	3,300	495,462	482,894	1,898,568	54,988	7,741	3,856,411	143,273	8,141,172	1950
1951	611,673	. . . .	. . . .	337,456	2,670,876	104,235	77,229	3,801,469	974,469	. . . .	. . .	269,774	2,122,698	58,042	10,260	3,435,243	293,873	7,530,585	1951
1952	3,089,057	. . .	. . . .	814,198	1,216,024	86,948	196,453	5,402,680	1,354,515	. . .	. .	509,385	459,840	45,328	34,234	2,403,302	296,860	8,102,842	1952
1953	3,009,258	*	*	1,097,602	1,179,273	122,091	100,252	5,508,476	1,723,934	*	*	500,615	516,922	53,911	69,866	2,865,248	250,385	8,624,109	1953
1954	725,729	. . .	. . .	699,810	4,377,438	166,011	27,126	5,946,114	812,525	. . .	.	249,972	2,147,546	64,155	48,409	3,322,607	369,962	9,638,683	1954
1955	672,464	.	.	903,814	4,039,030	160,694	2,501	5,778,503	498,611	. . .	. . . .	244,599	1,476,445	42,186	2,218	2,264,059	507,116	8,549,678	1955
1956	565,289	. . .	. . .	613,312	4,717,583	122,074	3,978	6,022,236	586,218	. . . .	. . . .	234,984	2,179,516	60,745	2,516	3,063,979	576,364	9,662,579	1956
1957	501,952	. . . .	. . . .	830,372	4,942,747	102,544	3,924	6,381,539	519,059	. . . .	. . . .	255,225	1,972,937	64,173	4,364	2,815,758	528,147	9,725,444	1957
1958	581,821	*	*	671,668	5,724,674	118,296	101,461	7,197,920	443,563	*	*	126,264	1,965,899	56,017	7,938	2,599,681	621,066	10,418,667	1958
1959	611,434	*	*	1,394,434	5,312,851	165,985	57,355	7,542,059	291,481	*	*	112,047	1,440,557	16,176	103	1,860,364	730,020	10,132,443	1959
1960	6,938,589	*	*	1,503,397	*	*	9,239	8,451,225	1,361,369	*	*	279,477	*	*	*	1,640,846	627,623	10,719,694	1960

*Segregation of lightmeat tuna pack as to species, and amounts of chunks, flakes and tonno not available at presstime. Accordingly, all lightmeat tuna and special packs made from lightmeat have been shown under Yellowfin. Albacore totals also include chunks, flakes and tonno packed from this species.

and a new net winch power system, preparatory to moving to African waters with her skipper, Frank Gargas.

- In late summer of 1960 one of the angriest price wars in the history of the industry broke out when the two major canners reduced their offers to the fleet.

The original price reduction was announced in August, and the fleet immediately tied up. Discussions followed fast and furious. Motions were made to unite all tuna fishermen. Albacore men included, in one big association to present a united front on price. Tempers rose and rash words were pronounced. The fishermen's unions took part in the controversy, looking to protect their members against a reduction in the dollar value of their shares.

Finally the canners announced a new pricing procedure. Guarantee letters would be handed to the skippers before their vessels left for the fishing grounds, guaranteeing fixed prices

1960 - Pacific Coast Frozen Tuna Imports by Months

(TONS)

AREAS AND GRADES	Nov. '59	Dec. '59	Jan. '60	Feb.	March	April	May	June	July	August	Sept.	Oct.	TOTAL
To California													
Albacore	2,048	1,371	1,428	2,565	4,203	2,224	1,925	595	588	319	674	720	18,660
Lightmeat, etc.	2,031	5,191	3,382	1,899	4,551	4,756	4,471	6,376	4,876	4,066	5,055	3,634	50,288
1959-60 Total	4,079	6,562	4,810	4,464	8,754	6,980	6,396	6,971	5,464	4,385	5,729	4,354	68,948
1958-59 Total	4,952	6,979	7,837	6,716	6,770	8,281	5,465	7,110	7,657	5,833	3,924	6,630	78,154
To Oregon & Washington													
Albacore	893	1,643	2,143	987	537	50	100	374	745	1,001	764	1,848	11,085
Lightmeat, etc.	91	...	...	60	225	229	55	1,080	1,338	600	303	500	4,481
1959-60 Total	984	1,643	2,143	1,047	762	279	155	1,454	2,083	1,601	1,067	2,348	15,566
1958-59 Total	682	1,515	470	350	633	400	334	17	77	1,625	1,118	657	7,878
Pacific Coast													
1959-60 Total	5,063	8,205	6,953	5,511	9,516	7,259	6,551	8,425	7,547	5,986	6,796	6,702	84,514
1958-59 Total	5,634	8,494	8,307	7,066	7,403	8,681	5,799	7,127	7,734	7,458	5,042	7,287	86,024

California Pack of Canned Tuna and Related Fishes

— Cases —

YEAR	SAN PEDRO DISTRICT				SAN DIEGO DISTRICT				GRAND TOTAL	YEAR
	Light Tuna	White Tuna	Other Tuna*	TOTAL	Light Tuna	White Tuna	Other Tuna*	TOTAL		
1912	...	...	...	...	...	...	...	...	75,900**	1912
1913	...	...	...	...	...	...	...	...	77,500**	1913
1914	...	...	...	...	...	...	...	...	217,000**	1914
1915	...	...	...	...	...	...	...	...	237,365**	1915
1916	315,880	82,593	6,457	404,930	71,062	13,593	245	84,900	489,830	1916
1917	382,273	118,769	11,928	512,970	140,563	17,261	12,746	170,570	683,540	1917
1918	228,241	82,801	87,110	398,152	50,129	...	73,072	123,201	521,353	1918
1919	487,812	144,383	65,008	697,203	62,318	47,869	24,572	134,759	831,962	1919
1920	668,012	§	1,534	669,546	167,633	§	1,623	169,256	838,802	1920
1921	72,410	255,194	...	327,604	27,869	82,157	48	110,074	437,678	1921
1922	334,733	166,496	3,651	504,880	129,349	27,269	23	156,641	661,521	1922
1923	312,187	209,591	17,803	539,581	224,315	88,014	4,869	317,198	856,779	1923
1924	134,497	278,855	113,401	526,753	27,207	106,958	11,382	145,547	672,300	1924
1925	323,422	358,940	116,149	798,511	187,909	95,007	11,936	294,852	1,093,363	1925
1926	380,074	43,660	150,185	573,919	188,649	14,578	56,280	259,507	833,426	1926
1927	381,541	105,598	231,751	718,890	436,700	20,916	30,368	487,984	1,206,874	1927
1928	473,868	99,093	128,374	701,335	473,704	658	21,581	495,943	1,197,278	1928
1929	394,819	130,212	146,104	671,135	700,020	2,426	55,284	757,730	1,428,865	1929
1930	658,728	143,748	130,159	932,635	950,461	1,783	35,510	987,754	1,920,389	1930
1931	394,668	144,796	85,653	625,117	543,536	177	10,303	554,016	1,179,133	1931
1932	385,399	52,215	88,112	525,726	606,608	...	15,655	622,263	1,161,151	1932
1933	341,290	49,391	71,388	462,069	877,124	...	52,980	930,104	1,392,173	1933
1934	714,546	82,182	116,526	913,254	982,547	...	31,509	1,014,056	1,927,310	1934
1935	808,578	107,501	230,772	1,139,851	1,222,894	4,648	109,323	1,336,875	2,476,727	1935
1936	840,151	53,849	153,107	1,047,107	1,392,531	35	147,509	1,540,075	2,587,182	1936
1937	881,208	83,123	260,016	1,224,346	1,680,720	8,036	105,211	1,793,967	3,018,314	1937
1938	697,804	265,034	233,766	1,196,604	1,282,571	24,355	95,202	1,402,128	2,598,732	1938
1939	982,225	281,666	262,367	1,526,258	1,633,113	46,372	70,917	1,750,402	3,305,297	1939
1940	1,110,181	122,484	315,778	1,548,443	2,045,071	19,304	251,623	2,315,998	3,868,394	1940
1941	554,782	73,024	235,910	863,716	1,372,594	10,145	274,643	1,657,382	2,530,169	1941
1942	594,056	128,670	97,901	820,627	1,164,524	104,578	146,234	1,415,336	2,242,220	1942
1943	554,928	187,052	234,382	976,362	699,099	227,347	394,265	1,320,711	2,308,415	1943
1944	805,081	125,632	270,821	1,201,534	760,263	307,806	537,889	1,605,958	2,809,177	1944
1945	825,377	148,286	503,118	1,476,781	1,518,646	329,251	128,686	1,976,583	3,456,442	1945
1946	1,170,791	141,629	646,615	1,959,035	2,023,870	233,622	332,529	2,590,021	4,555,397	1946
1947	1,317,016	104,726	733,587	2,155,329	2,576,804	145,300	418,797	3,140,911	5,357,498	1947
1948	1,264,615	290,811	771,182	2,326,608	3,096,315	462,255	406,248	3,964,818	6,346,952	1948
1949	810,362	289,063	1,458,374	2,557,799	2,967,150	535,013	449,413	3,951,576	6,590,396	1949
1950	1,024,410	586,683	2,673,668	4,284,761	1,412,220	482,894	1,961,297	3,856,411	8,141,172	1950
1951	3,143,863	580,377	77,229	3,801,469	3,015,164	409,819	10,260	3,435,243	7,530,264	1951
1952	4,204,207	1,002,020	196,453	5,402,680	1,742,124	626,944	34,234	2,403,302	8,102,842¶	1952
1953	4,042,121	1,366,103	100,252	5,508,476	2,139,393	655,989	69,866	2,865,248	8,624,109¶	1953
1954	4,712,414	1,206,664	27,126	5,946,204	2,880,712	393,486	48,409	3,302,847	9,638,773¶	1954
1955	4,872,188	903,814	2,501	5,778,503	2,017,242	244,599	2,218	2,264,059	8,549,678¶	1955
1956	4,980,228	1,038,030	3,978	6,022,236	2,717,577	343,886	2,516	3,063,979	9,662,579¶	1956
1957	4,789,433	1,588,182	3,924	6,381,539	2,352,808	458,586	4,364	2,815,758	9,197,297	1957
1958	6,039,885	1,056,574	101,461	7,197,920	2,407,728	184,015	7,938	2,599,681	10,418,667	1958
1959	6,090,270	1,394,434	57,355	7,542,059	1,748,214	112,047	103	1,860,364	10,132,443	1959
1960	6,938,589	1,503,397	9,239	8,451,125	1,361,369	279,477	...	1,640,846	10,719,694	1960

¶Quantities of tuna canned in Monterey, San Francisco and elsewhere in Northern California have been included in the grand total. Figures for final year are temporary totals from official sources. Data for previous years have been corrected according to official statistics of the California Department of Fish and Game.

*"Other Tuna" through 1950 includes Bonito, Yellowtail, Flakes and Tonno. For 1951 and thereafter this column includes only Yellowtail and Bonito, Flakes and Tonno being included in other columns.

§Included under other heads.

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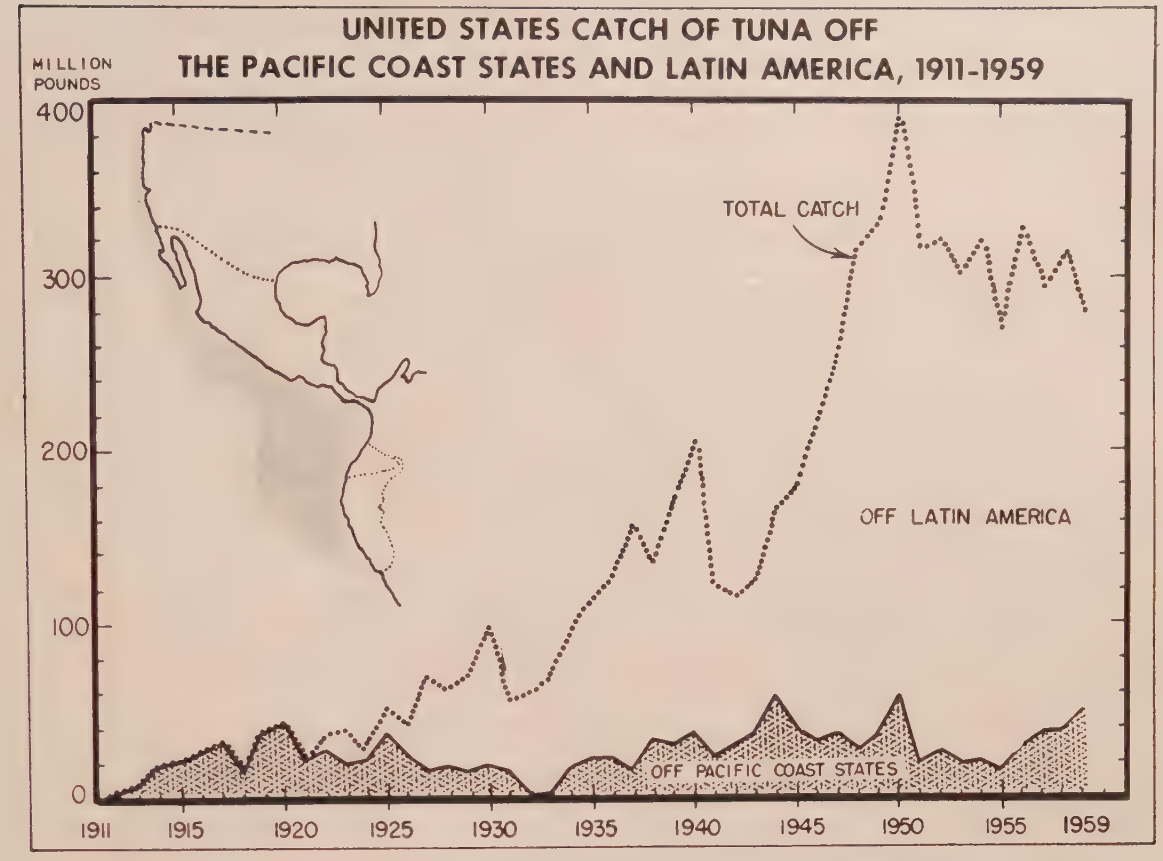

-- From U.S. Bureau of Commercial Fisheries.

varying with the size and species of fish, each species broken down into several price size classes. Although the boat-owners associations' have never officially accepted the plan, the method was still in effect at the end of the year, and the canners' price schedules were such that the old contract prices of $250 a ton for Yellowfin and $210 for Skipjack were virtually back.

● The unprecedented catch of Yellowfin in the Eastern Pacific in 1960 raised in some well-informed minds the question of conservation. In fact, it was hinted that 1961 might be a year of big decisions on that point.

Experts generally agree that there is a limit to the quantity of Yellowfin that can be taken out of the Eastern Pacific without overfishing the resource; and some wondered whether that limit might not be in sight, with the increased efficiency of the purse-seine fleet. On the other hand, the Eastern Pacific stocks of Skipjack are generally believed to be clearly safe from overfishing. Yet the Yellowfin unloadings at California canneries increased from 56,602 tons in 1959 to 96,832 in 1960, while the figures on Skipjack dropped from 60,284 to 27,560. These figures, from the Bureau of Commercial Fisheries, include transshipments from U. S. flag vessels based in foreign ports.

In 1961 the fishing power of the California purse seine fleet will be increased, as the vessels now being converted add their capacity to the total, the current conversions being among the biggest in the fleet.

Imports of both Skipjack and Yellowfin fell off during the year. Skipjack imports were 9713 tons in 1960

1960 -IMPORTS OF CANNED TUNA TO U. S.

(Pounds)

Countries		Oct. '59	Nov. '59	Dec. '59	Jan.	Feb.	March	April	May	June	July	August	Sept.	TOTAL
JAPAN -	TOTAL	5,392,000	5,610,000	3,446,000	2,902,000	1,026,000	2,339,000	4,723,000	3,539,000	4,680,000	3,845,000	4,491,000	4,484,000	46,477,000
Albacore:	Oil	8,000	19,000	34,000	29,000	16,000	13,000	---	---	26,000	10,000	25,000	25,000	205,000
	Brine	1,524,000	968,000	790,000	865,000	296,000	203,000	1,412,000	1,126,000	1,591,000	889,000	1,829,000	1,563,000	13,056,000
Other Tuna:	Brine	3,860,000	4,623,000	2,622,000	2,008,000	714,000	2,123,000	3,311,000	2,413,000	3,063,000	2,946,000	2,637,000	2,896,000	33,216,000
PERU -	TOTAL	241,000	---	---	---	---	---	---	---	---	---	---	---	241,000
Lightmeat:	Oil	241,000	---	---	---	---	---	---	---	---	---	---	---	241,000
	Brine	---	---	---	---	---	---	---	---	---	---	---	---	---
PORTUGAL -	TOTAL	218,000	241,000	---	189,000	124,000	60,000	126,000	19,000	29,000	44,000	213,000	97,000	1,360,000
Lightmeat:	Oil	---	---	---	---	---	---	---	---	---	---	---	---	---
	Brine	218,000	241,000	---	189,000	124,000	60,000	126,000	19,000	29,000	44,000	213,000	97,000	1,360,000
AZORES -	TOTAL	6,000	---	---	50,000	---	---	---	---	---	---	---	---	56,000
Lightmeat:	Oil	---	---	---	---	---	---	---	---	---	---	---	---	---
	Brine	6,000	---	---	50,000	---	---	---	---	---	---	---	---	56,000
SPAIN -	TOTAL	---	---	---	---	121,000	260,000	125,000	46,000	65,000	68,000	222,000	277,000	1,184,000
Albacore:	Oil	---	---	---	---	---	---	---	---	---	---	---	---	---
	Brine	---	---	---	---	102,000	225,000	125,000	30,000	65,000	61,000	205,000	236,000	1,049,000
Other Tuna:	Oil	---	---	---	---	---	---	---	---	---	---	---	---	---
	Brine	---	---	---	---	19,000	35,000	---	16,000	---	7,000	17,000	41,000	135,000
OTHERS -	TOTAL	1,474,000	1,545,000	515,000	1,230,000	480,000	486,000	246,000	281,000	138,000	457,000	456,000	730,000	8,038,000
Albacore:	Oil	25,000	7,000	6,000	109,000	2,000	13,000	6,000	13,000	4,000	14,000	3,000	38,000	240,000
	Brine	717,000	469,000	129,000	485,000	18,000	90,000	80,000	20,000	5,000	78,000	47,000	201,000	2,339,000
Other Tuna:	Oil	17,000	37,000	11,000	7,000	129,000	16,000	4,000	1,000	2,000	15,000	3,000	9,000	251,000
	Brine	715,000	1,032,000	369,000	629,000	331,000	367,000	156,000	247,000	127,000	350,000	403,000	482,000	5,208,000

compared with 12,780 for 1959; Yellowfin, 36,899 tons for 1960, 49,919 for 1959. The domestic supply, bought by canners at lower prices than last year, was so attractive that foreign offerings of light meat lost some of their appeal.

- Many changes in design were noted in 1960's crop of conversions from tuna clipper to seiner.

The "poop deck," a raised section of deck aft, was adopted by several vessels, to add buoyancy to the vessel, and avoid loss of storage capacity in conversion. Two big seiners and several smaller ones, adopted the king post method of mounting the power-block, on a comparatively short boom farther aft and to starboard of the conventional location. New methods for brailing fish into the vessel were

SAN PEDRO CANNED TUNA

YEAR	(Cases) Yellowfin	Bluefin	Skipjack	Albacore	Tonno	Tuna Flakes	Yellowtail	Bonito	TOTAL
1930	262,278	302,660	82,282	143,748	57,110	11,508	16,505	56,544	932,635
1931	182,115	46,462	166,091	144,796	35,514	12,850	1,292	35,997	625,117
1932	275,263	8,510	101,626	52,215	42,247	11,517	2,447	31,901	525,726
1933	258,982	7,580	74,728	49,391	41,200	10,907	1,389	17,892	462,069
1934	317,846	325,350	71,350	82,182	55,163	22,402	3,716	35,245	913,254
1935	306,202	413,630	88,746	107,501	81,660	33,909	17,123	91,080	1,139,851
1936	343,234	311,987	184,930	53,849	57,797	9,906	17,069	68,335	1,047,107
1937	416,611	188,432	276,165	83,123	136,612	34,534	3,352	85,518	1,224,347
1938	273,365	273,358	151,081	265,034	67,404	47,092	27,440	91,830	1,196,604
1939	578,727	191,456	212,042	281,666	70,022	41,104	11,739	139,502	1,526,258
1940	536,391	267,343	306,447	122,484	124,094	85,459	40,861	65,364	1,548,443
1941	308,886	136,333	109,563	73,024	33,530	40,545	26,241	135,594	863,716
1942	214,391	250,685	128,980	128,670	23,479	39,880	16,427	18,115	820,627
1943	303,881	162,844	88,203	187,052	17,239	120,548	67,780	28,815	976,362
1944	341,687	357,531	105,863	125,632	15,365	234,639	16,611	4,206	1,201,534
1945	460,982	275,116	89,279	148,286	16,198	452,292	3,262	31,366	1,476,781
1946	663,814	304,248	202,729	141,629	....	558,026	15,080	73,509	1,959,035
1947	765,426	342,309	209,281	104,726	7,403	417,644	87,934	220,606	2,155,329
1948	969,732	94,190	200,693	290,811	23,009	477,769	120,257	150,147	2,326,608
1949	614,847	38,142	157,373	289,063	78,821	1,330,358	31,072	18,123	2,557,799
1950	742,815	14,786	266,809	586,683	202,368	2,456,705	10,838	3,757	4,284,761
1951	*	*	1,289,523*	437,408	104,235	1,959,227	**	22,926**	3,813,319
1952	*	*	3,203,906*	844,821	84,821	1,345,665	**	61,081**	5,540,033
1953	*	*	2,922,287*	1,044,756	120,625	1,043,893	51,092	52,629	5,235,282
1954	*	*	725,729*	699,810	116,011	4,377,438	9,949	17,177	5,946,114
1955	*	*	672,464*	903,814	160,694	4,039,030#	224	2,277	5,778,503
1956	*	*	565,289*	613,312	122,074	4,717,583#	3,448	530	6,022,236
1957	*	*	501,952*	830,372	102,544	4,942,747#	1,811	2,113	6,381,539
1958	*	*	581,821*	671,668	118,296	5,724,674#	836	100,625	7,197,920
1959	*	*	611,434*	921,065	165.985	6,964,590#	449	56,968	8,720,491

*Yellowfin, Bluefin and Skipjack not given separately #Includes Chunks and miscellaneous. **Yellowtail and Bonito not given separately

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THE HALFHILL COMPANY

Since 1903—Oldest Name in Tuna

TUNA — A full line of all sizes and packs of Tuna
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T. A. HALFHILL, President

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devised, including a fish-hopper that swings outboard clear of the vessel during fishing operations. One vessel planned to re-power her net winch using higher power and a more direct transmission system.

Two vessels, the *West Point* and the *Sea Pride* installed the newest type of Simrad (Norwegian) echo fish detector or sonar unit which operates over a full 180° horizontal range and 90° vertically, sending out a sound wave which bounces back from an object it may strike (such as a school or individual fish), registering its findings on a recording graph in the wheelhouse. The Simrad unit will find fish as far away as a mile, it was said.

Summing up, the year 1960 was a revolutionary, prosperous year for both canners and fishermen; 1961 may be even more prosperous, and it seems almost certain to be more revolutionary.

Shipments of Tuna Received in California

(Pounds)

Year	Albacore	Yellowfin	Skipjack	Bluefin	Bigeye	Other	TOTAL
1944	2,535,547	72,859	899,862	...	...	...	3,508,268
1945	60,901	1,317,589	74,489	...	...	...	1,452,979
1946	...	817,987	210,687	...	...	...	1,028,674
1947	269,397	1,392,590	146,655	...	...	...	1,808,642
1948	1,141,747	...	364	168,180	...	...	1,310,291
1949	254,664	673,632	11,911	...	...	5,655	945,863
1950	4,378,420	7,961,748	3,251,118	107,878	...	40,000	15,739,164
1951	17,520,891	13,120,725	2,858,749	2,112	...	36,858	33,539,335
1952	22,525,248	7,141,589	4,157,441	...	...	2,306	33,826,584
1953	46,186,816	8,458,606	8,347,736	62,447	20,000	...	63,075,605
1954	38,466,383	29,701,898	15,707,756	771,147	1,249,937	3,901	85,901,022
1955	44,844,675	40,526,143	18,687,354	343,346	512,534	...	104,914,052
1956	20,322,775	54,604,513	16,165,120	162,875	668,082	...	91,923,365
1957	39,564,027	45,085,798	20,938,140	323,024	827,474	...	106,738,463
1958	27,485,321	93,979,964	25,303,518	242,820	5,386,894	185,543	152,584,060
1959	29,741,982	102,622,211	47,728,534	554,738	2,211,649	...	182,859,114

SAN DIEGO CANNED TUNA BY GRADES

YEAR & TYPE	Solid	Standard	Chunks	Grated & Flakes	Dark & Light	Tonno	Misc.	TOTAL
1951								
Lightmeat	872,560	101,909	1,444,755	530,229	2,678	58,042	4,991	3,015,164
Whitemeat	180,887	88,887	100,926	39,119	.....	......	.....	409,819
Yellowtail & Bonito	....	270	....	12,175	.....	......	.....	12,445
TOTAL	1,053,447	191,066	1,545,681	581,523	2,678	58,042	4,991	3,437,428
1952								
Lightmeat	475,181	26,455	902,647	344,532	.....	36,868	1,009	1,786,692
Whitemeat	309,319	....	225,255	109,774	.....	7,708	.....	652,056
Yellowtail & Bonito	....	80	3,035	31,117	.....	......	.....	34,232
TOTAL	784,500	26,535	1,130,937	485,423	.....	44,576	1,009	2,472,980
1953								
Lightmeat	492,617	56,386	1,123,132	368,405	3,810	44,134	2,858	2,091,342
Whitemeat	351,945	....	142,192	141,440	557	10,875	.....	647,009
Yellowtail & Bonito	....	68	14,114	55,684	.....	......	.....	69,866
TOTAL	8 44,562	56,454	1,279,438	565,529	4,367	55,009	2,858	2,808,217
1954								
Lightmeat	763,880	48,645	1,614,929	384,897	4,206	64,155	....	2,880,712
Whitemeat	249,972	....	84,809	58,563	.....	......	142	393,486
Yellowtail & Bonito	33	3,346	1,201	43,829	.....	......	.....	48,409
TOTAL	1,013,885	51,991	1,700,939	487,289	4,206	64,155	142	3,322,607
1955								
Lightmeat	463,761	34,850	1,144,899	266,162	.....	42,186	.....	1,951,858
Whitemeat	243,998	601	23,720	41,537	.....	......	.....	309,856
Yellowtail & Bonito	....	24	34	2,160	.....	......	.....	2,218
TOTAL	7 07,759	35,475	1,168,653	309,859	.....	42,186	.....	2,263,932
1956								
Lightmeat	588,264	44,877	1,773,473	335,296	.....	58,135	4,314	2,804,359
Whitemeat	271,163	283	59,769	48,285	.....	......	504	380,004
Yellowtail & Bonito	....	....	30	2,486	.....	......	.....	2,516
TOTAL	8 59,427	45,160	1,833,272	386,067	.....	58,135	4,818	3,186,879
1957								
Lightmeat	493,786	25,273	1,436,988	329,541	.....	63,912	3,308	2,352,808
Whitemeat	254,913	312	131,511	70,591	.....	261	998	458,586
Yellowtail & Bonito	....	452	482	3,430	.....	.....	....	4,364
TOTAL	748,699	26,037	1,568,981	403,562	.....	64,173	4,306	2,815,758
1958								
Lightmeat	420,554	23,009	1,445,522	394,563	.....	55,852	68,228	2,407,728
Whitemeat	126,249	15	15,884	41,450	.....	165	252	184,015
Yellowtail & Bonito	....	....	3,565	4,373	.....	.....	....	7,938
TOTAL	546,803	23,024	1,464,971	440,386	.....	56,017	68,480	2,599,681
1959								
Lightmeat	284,528	6,953	1,123,704	236,507	.....	16,176	80,346	1,748,214
Whitemeat	71,225	94	23,865	16,863	.....	......	......	112,047
Yellowtail & Bonito	....	.....	....	103	.....	......	......	103
TOTAL	355,753	7,047	1,147,569	253,473	.....	16,176	80,346	1,860,364

Tuna Prices Per Ton Paid Fishermen

YEAR	Albacore	Yellowfin	Bluefin	Skipjack
1917	$30	$50	$45	$40
1918	125	90	80	40
1919	200	90	80	40
1920	300	90	80	40
1921	145	80	80	60
1922	250	100	80	60
1923	300	80	75	60
1924	360	80	80	60
1925	200	80	80	60
1926	175	110	110	75-80
1927	Nominal	110	90	75
1928	200 up	120	90	75
1929	300	120	110	70-80
1930	200	120	110	90
1931	200	120-100	90	90-80
1932	200	80	75	70
1933	200	100	90	80
1934	200	100	90	80
1935	125-160	100	90	80
1936	Nominal	105-110	95-90	85-90
1937	215	120	110	100
1938	215-130	120	110	100
1939	125	110	100	90
1940	140	110	110	100
1941	140	110-130	110-120	100-110
1942	300-400	190	180	170
1943	325	200	190	180
1944	325-390	200	190	180
1945	390	200	190	180
1946	390-440	200-280	190-270	180-260
1947	410-600	310-340	300	290-320
1948	550-740-425	340	330	320
1949	400-350	340-310	330-300	320-290
1950	400	310	300	290
1951	400-250-300	310	300	290
1952	350-400	320	310	280
1953	400	320	310	280
1954	400-410	350-330	340-320	320-290
1951	350-310-330	330-270	320-210	290-230
1956	375-300	270	280-260	230
1957	310-280-300	270-230-270*	260-200-260	230-190-230*
1958	425	275-283-263	260	235-252-223
1959	435-400	270-240-253	260-240	230-200-217
1960	325-375	250	240	210

NOTE:- Prices quoted are per ton of round fish in good condition landed at cannery dock. All fish rejected by inspectors, either as landed or after precooking, are deducted from the gross weight.

Figures given undertake to state the prevailing market level. Where a range in prices is shown it represents a definite change in market level in the course of the season, the movement being from the first to the second figures stated. Quotations for 1943 through 1945 are OPA ceiling prices for cannery fish, and represent the total amounts which may be paid the fishermen in cash or allowances, save for the cost of war-risk insurance. The lower figures in 1946 are ceiling prices and the higher represent levels attained after removal of OPA controls.

*Final prices quoted for Yellowfin and Skipjack were the minimum prices acceptable for opening bids on the tuna auction initiated at San Diego in 1957 by the American Tunaboat Association.

SAN DIEGO CANNED TUNA

Year	(Cases -- All Sizes)								
	Yellowfin	Bluefin	Skipjack	Albacore	Tonno	Tuna Flakes	Yellowtail	Bonito	TOTAL
1930	739,616	6,944	185,848	1,783	17,875	18,053	4,838	12,797	987,754
1931	431,229	.....	112,307	177	706	6,591	749	2,257	554,016
1932	403,050	177	203,381	.....	.....	4,774	668	10,213	622,263
1933	678,810	1	198,313	.....	.....	2,183	32,129	18,668	930,104
1934	780,066	6,683	195,798	.....	.....	8,100	6,100	17,309	1,014,056
1935	948,276	24,871	249,747	4,648	545	7,749	64,054	36,985	1,336,875
1936	1,074,811	22,390	295,330	35	740	14,967	95,059	36,743	1,540,075
1937	1,165,866	27,103	487,751	8,036	1,125	15,904	44,128	44,054	1,793,967
1938	1,010,814	49,840	221,917	24,355	.....	17,384	43,794	34,024	1,402,128
1939	1,348,565	27,020	257,528	46,372	7,318	31,136	12,875	19,588	1,750,402
1940	1,469,428	45,867	529,776	19,304	60,138	141,861	27,621	22,003	2,315,998
1941	1,016,759	32,369	323,466	10,145	308	130,004	103,066	41,265	1,657,382
1942	545,517	28,413	590,594	104,578	.....	111,096	20,965	14,173	1,415,336
1943	392,114	12,021	294,964	227,347	.....	381,967	5,488	6,810	1,320,711
1944	485,796	16,473	257,994	307,806	.....	530,368	3,237	4,284	1,605,958
1945	1,037,009	22,742	458,895	329,251	.....	96,162	14,074	18,450	1,976,583
1946	1,549,557	28,753	445,560	233,622	.....	268,767	28,965	34,797	2,590,021
1947	1,875,087	6,557	695,170	145,300	26,359	323,511	45,800	23,127	3,140,911
1948	2,364,819	1,991	729,505	462,255	.....	366,828	31,362	8,058	3,964,818
1949	2,059,468	2,889	904,793	535,013	4,038	420,491	22,695	2,189	3,951,576
1950	913,458	3,300	495,462	482,894	54,988	1,898,568	3,235	4,506	3,856,411
1951	*	2,424,215*	*	370,000	58,042	584,201	**	270**	3,437,428
1952	*	1,405,292*	*	534,574	44,576	485,423	**	3,115**	2,472,980
1953	*	1,674,428*	*	494,137	55,009	515,704***	52,042	17,824	2,809,144
1954	*	812,525*	*	249,972	64,155	2,147,546***	20,983	27,426	3,322,607
1955	*	498,611*	*	244,599	42,186	1,476,445#	1,756	462	2,264,059
1956	*	586,218*	*	234,984	60,745	2,179,516#	1,441	1,075	3,063,979
1957	*	519,059*	*	255,225	64,173	1,972,937#	3,102	1,262	2,815,758
1958	*	443,563*	*	126,264	56,017	1,965,899#	**	7,938**	2,599,681
1959	*	291,481*	*	71,319	16,176	1,481,285#	**	103**	1,860,364

*Yellowfin, Bluefin and Skipjack not given separately. **Yellowtail and Bonito not given separately. ***Includes miscellaneous.
#Includes chunks and miscellaneous.

Murray 1-5125

Hillcrest 6-2135

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AMBAYS

American High Seas Tuna Fleet

January, 1961

Capacity is given in tons of frozen tuna. Sources: American Tunaboat Association; Inter-American Tropical Tuna Commission; U. S. Bureau of Commercial Fisheries; yards and individual owners.

Converted Purse-Seiners Based in San Diego

Alphecca	220	*Liberty*	160
American Boy	270	*Liberty Belle*	180
American Enterprise	220	*Lusitania*	140
Antoinette B	250	*Mary Lou*	180
Azoreana	330	*Mary S*	180
Belle of Portugal	300	*Navigator*	320
Bernadette	320	*Normandie*	380
Cape Falcon	260	*Portuguesa*	180
Coimbra	265	*Queen Mary*	380
Commander	260	*Renown*	230
Commodore	210	*Ronnie S*	220
Constitution	320	*San Joaquin*	220
Conte Bianco	300	*Santa Rosa*	220
Corsair	215	*Saratoga*	230
Crusader	160	*Seafarer*	250
Dominator	300	*Sea Preme*	320
Ecuador	360	*South Coast*	180
Elsinore	320	*Southern Queen*	175
Endeavor	340	*Southern Pacific*	230
High Seas	230	*Star Crest*	180
Historic	190	*Sun Europa*	320
Jeanne Lynn	220	*Victoria*	370
Jo Linda	280	*West Point*	250
Katie Lou	220	*Wiley V A*	200

Converted Purse-Seiners Based in San Pedro

Cape Beverly	200	*Santa Helena* (to fish off Africa)	300
Determined	210	*St. Matthews*	220
Jo Maria	220	*Valiant*	220
Mauritania	320	*Western Ace*	600
Mayflower	320	*Western King*	600
Paramount	300		

Bait Boats, Active, Based in San Diego

Agnes C	160	*Mary C. Canas*	145
Benita	100	*Mimi Lou*	150
Carol Virginia	350	*Missouri*	350
Concho	350	*Monarch*	120
Conte di Savoia	310	*Mondego*	190
Courageous	310	*Notre Dame*	150
Elsie A	350	*San Juan*	350
Evelyn R	240	*Shamrock*	175
Frances Marie	170	*Shasta*	110
Gem of the Sea	260	*South Seas*	160
Golden Glow	165	*Sun Glow*	150
Independence	350	*Sun Hawk*	120
Invader	150	*Sun Venus*	150
Julia B	140	*United States*	350
Larry Roe	350	*Viking*	175
Lois Seaver	350	*West Coast*	155
Mary Barbara	350	*West Port*	350

"Regular (originally built as) Seiners Based in San Pedro

A A Ferrante	100	*Pioneer*	150
Anthony R	270	*Ronnie R*	190
California	200	*San Pedro Boy*	110
City of Los Angeles	135	*Santa Rita*	100
City of San Pedro	125	*Sea Pride*	105
Columbia	160	*Sea Rover*	125
Comet	105	*Sea Scout*	145
Courageous	130	*Sea Spray*	110
Defense	180	*Seven Seas*	105
Dolores R	165	*Sharon B*	115
Jania R	100	*Southern Explorer*	100
JoAnn	105	*Star of San Pedro*	115
Liberator	140	*Sun Beau*	150
Long Island	100	*US Liberator*	110
Marauder	110	*Vagabond*	100
Marsha Ann	145	*Vittoria*	100
Miss Universe	130	*Western Fisher*	145
North Queen	115	*Western Sky*	140
Nancy S	115	*Western Sky*	105

Bait Boats, Idle Jan. 1961, San Diego

Joan of Arc	300	*Mariner*	220
Kitty Hawk	275	*Sun Victoria*	350

Purse Seiners Based in Puerto Rico

American Queen	450	*Espirito Santo*	450
Beverly Lynn	210	*Equator*	380
Cabrillo	320	*White Star*	420
Chicken of the Sea	390		

American Flag Tunaboats Working out of Peruvian Ports

Barbara K	170	*Lucy Elena*	200
Carol S	220	*Ruthie B**	200
Fatima	210	*Santa Anita*	230
*Golden West**	170	*Sun Jason**	275
Heroic	210	*Sun King**	220
Intrepid	260	*Sun Splendor*	240
Judy S	260	*Western Monarch*	110
Lucky Star	175		

U. S. Flag Vessels Working out of West African Ports

Columbia	190	*May Queen**	220
*Freedom**	250		

---

*Indicates purse seiners. Other foreign-based boats are clippers.

1960 -IMPORTS OF FRESH AND FROZEN TUNA TO U.S.

(POUNDS)

Fresh - Frozen	Oct. '59	Nov. '59	Dec. '59	Jan.	Feb.	March	April	May	June	July	August	Sept.	TOTAL
JAPAN - Total	9,224,000	9,049,000	16,754,000	10,861,000	9,587,000	14,917,000	10,221,000	9,660,000	13,300,000	13,300,000	10,603,000	11,105,000	138,581,000
Albacore	3,202,000	3,695,000	11,477,000	6,640,000	5,787,000	8,647,000	5,129,000	2,972,000	3,202,000	2,880,000	1,128,000	2,900,000	57,659,000
Other Tuna	6,022,000	5,354,000	5,277,000	4,221,000	3,800,000	6,270,000	5,092,000	6,688,000	10,098,000	10,420,000	9.475,000	8,205,000	80,922,000
PERU - Lightmeat	8,589,000	1,008,000	4,346,000	6,368,000	1,454,000	---	3,270,000	5,568,000	2,894,000	1,332,000	6,841,000	3,551,000	45,221,000
ECUADOR - Lightmeat	2,035,000	1,207,000	164,000	1,709,000	20,000	17,000	600,000	375,000	2,325,000	738,000	1,091,000	702,000	10,983,000
OTHERS - Total	2,091,000	1,515,000	1,381,000	1,993,000	338,000	3,614,000	1,112,000	5,939,000	1,917,000	9,397,000	8,657,000	5,264,000	43,218,000
Albacore	77,000	1,009,000	48,000	---	---	2,787,000	---	1,807,000	---	310,000	3,527,000	993,000	10,558,000
Other Tuna	2,014,000	506,000	1,333,000	1,993,000	338,000	827,000	1,112,000	4,132,000	1,917,000	9,087,000	5,130,000	4,271,000	32,660,000
Total Albacore	3,279,000	4,704,000	11,525,000	6,640,000	5,787,000	11,434,000	5,129,000	4,779,000	3,202,000	3,190,000	4,655,000	3,893,000	68,217,000
Total Lightmeat	18,660,000	8,075,000	11,120,000	14,291,000	5,612,000	7,114,000	10,074,000	16,763,000	17,234,000	21,577,000	22,537,000	16,729,000	169,786,000
GRAND TOTAL	21,939,000	12,779,000	22,645,000	20,931,000	11,399,000	18,548,000	15,203,000	21,542,000	20,436,000	24,767,000	27,192,000	20,622,000	238,003,000

SAN PEDRO CANNED TUNA BY GRADES

YEAR & TYPE	Solid	Standard	Chunks	Grated & Flakes	Dark & Light	Tonno	Misc.	TOTAL
1951								
Lightmeat	497,942	113,731	666,590	1,701,833	48,690	103,817	11,260	3,143,863
Whitemeat	264,789	72,667	99,723	141,941	610	418	229	580,377
Yellowtail & Bonito	---	22,926	---	66,153	----	---	---	89,079
TOTAL	762,731	209,324	766,313	1,909,927	49,300	104,235	11,489	3,813,319
1952								
Lightmeat	820,745	89,832	2,198,446	973,275	54,830	83,083	94,883	4,315,094
Whitemeat	505,833	12,114	302,238	178,827	6,276	1,738	24,375	1,031,401
Yellowtail & Bonito	---	53,475	7,606	132,457	----	---	---	193,538
TOTAL	1,326,578	155,421	2,508,290	1,284,559	61,106	84,821	119,258	5,540,033
1953								
Lightmeat	580,967	128,009	2,187,041	745,753	29,961	124,626	136,270	3,932,627
Whitemeat	699,469	18,379	326,908	217,422	10,546	164	40,211	1,313,099
Yellowtail & Bonito	---	10,915	16,865	75,941	----	---	---	103,721
TOTAL	1,280,436	157,303	2,530,814	1,039,116	40,507	124,790	176,481	5,349,447
1954								
Lightmeat	595,102	130,717	2,982,897	665,484	38,560	115,684	183,970	4,712,414
Whitemeat	691,162	8,648	272,537	203,845	7,687	327	22,458	1,206,664
Yellowtail & Bonito	---	8,456	812	17,858	----	---	---	27,126
TOTAL	1,286,264	147,821	3,256,246	887,187	46,247	116,011	206,428	5,946,204
1955								
Lightmeat	635,460	37,004	2,960,532	476,245	27,175	133,519	94,190	4,364,125
Whitemeat	872,403	31,411	233,586	232,775	5,084	---	36,618	1,411,877
Yellowtail & Bonito	---	272	---	2,229	----	---	---	2,501
TOTAL	1,507,863	68,687	3,194,118	711,249	32,259	133,519	130,808	5,778,503
1956								
Lightmeat	546,110	34,284	3,795,946	399,586	47,289	119,332	69,433	5,011,980
Whitemeat	607,003	26,656	287,068	117,444	4,257	25	15,340	1,057,793
Yellowtail & Bonito	---	---	---	3,978	----	---	---	3,978
TOTAL	1,153,113	60,940	4,083,014	521,008	51,546	119,357	84,773	6,073,751
1957								
Lightmeat	479,153	22,799	3,582,157	466,331	61,883	100,666	76,444	4,789,433
Whitemeat	793,641	36,731	536,927	186,358	9,959	1,878	22,688	1,588,182
Yellowtail & Bonito	---	39	---	3,885	----	---	---	3,924
TOTAL	1,272,794	59,569	4,119,084	656,574	71,842	102,544	99,132	6,381,539
1958								
Lightmeat	580,370	1,451	4,545,758	681,551	66,919	118,296	45,540	6,039,885
Whitemeat	670,560	1,108	239,721	131,429	2,434	---	11,322	1,056,574
Yellowtail & Bonito	---	2,000	56,802	41,823	----	---	836	101,461
TOTAL	1,250,930	4,559	4,842,281	854,803	69,353	118,296	57,698	7,197,920
1959								
Lightmeat	602,781	8,653	5,743,150	623,934	81,916	165,985	42,221	7,268,640
Whitemeat	921,065	---	265,508	176,370	6,199	---	25,292	1,394,434
Yellowtail & Bonito	---	---	26,144	30,824	---	---	449	57,417
TOTAL	1,523,846	8,653	6,034,802	831,128	88,115	165,985	67,962	8,720,491

Oregon, Washington and Hawaii Albacore

YEAR	Solid	Chunks	Flakes & Grated	TOTAL	YEAR	Solid	Chunks	Flakes & Grated	TOTAL	VALUE
1939	...	...	...	173,359	1950	502,778	198,236	...	701,014	$ ....
1940	...	.	...	207,723	1951	292,973	96,263	...	389,236	....
1941	. .	..	...	197,629	1952	391,242	197,684	...	588,926	....
1942	...	...	...	314,353	1953	412,819	181,254	...	594,073	....
1943	260,085	41,329	...	301,414	1954	356,666	113,530	...	470,196	....
1944	604,574	242,022	...	846,596	1955	438,945	39,583	105,412	583,940	7,837,294
1945	324,900	141,959	...	466,859	1956	642,218	54,751	123,785	820,754	10,549,970
1946	136,127	56,110	...	192,237	1957	561,291	67,510	140,042	768,843	10,187,730
1947	272,888	112,682	...	385,570	1958	635,013	69,384	145,459	*849,856	11,702,466
1948	293,547	123,809	...	417,356	1959	699,385	49,006	141,781	890,172	11,482,377
1949	326,911	106,008	...	432,919	1960	946,475	125,313	172,870	1,244,658	17,410,000

NOTE:- Small quantities canned at Eureka, Calif., have been included in the Pacific Northwest. Grade segregation not available for all styles of pack, and pack valuation not available for years prior to 1955. All figures are on the basis of standard cases of 48 halves. Valuation for current year is a preliminary total and subject to correction. *Albacore production of Hawaii not included prior to 1958.

- Albacore canning in the Pacific states outside California reached a new all-time peak in 1960 with a pack of 1,244,658 standard cases.

Although this far exceeded the other non-California American production of White Meat tuna, the light-meat pack of the Atlantic states, Gulf Coast, Puerto Rico and American Samoa ran far ahead of the Pacific states outside of California, 1,794,125 to 605,873 cases.

The Atlantic and insular packs also were larger than ever before, with a combined total of 2,674,062 cases.

- North Pacific Albacore fishing was disappointing in 1960, falling materially short of the good tonnage of the previous year. Prices to the fishermen were disappointing in spite of the scant production.

Conversely, the Western Pacific and Equatorial Atlantic production of Albacore was surprisingly good, forecasting a larger share in the world's tuna business for White Meat tuna in ensuing years.

- Pacific Northwest direct landings of Albacore, which in 1959 had been excellent, fell disappointingly in 1960 to a mere 4,027,461 lbs., as compared with 13,542,000 the year before.

The reason was solely one of availability. The fish appeared in Oregon offshore waters in fair volume early, but disappeared with September, only a nominal amount of tuna being landed in the northwest during October.

A striking feature of the year was the rise of an Albacore purse seine fishery off Oregon. This was engaged in by California and Canadian vessels. Those from California reported themselves disappointed with results, and

NORTH PACIFIC ALBACORE TUNA LANDINGS

(POUNDS)

OREGON			YEAR	WASHINGTON					Combined Oregon and Washington TOTALS
Columbia River	South of Columbia	Oregon TOTAL		Puget Sound	Grays Harbor	Willapa Harbor	Columbia River	Washington TOTAL	
5,679,942	2,162,263	7,842,205	1948	637,822	5,050,164	251,165	511,382	6,450,533	14,292,738
4,553,180	1,773,760	6,326,940	1949	943,811	3,231,194	112,222	146,674	4,433,901	10,760,841
4,056,233	1,434,284	5,490,517	1950	503,953	3,099,890	209,104	473,328	4,286,275	9,776,792
1,982,583	933,962	2,916,545	1951	133,989	333,049	54,353	1,098	521,489	3,438,034
1,400,060	1,185,294	2,585,354	1952	72,310	86,973	17,780	---	177,063	2,762,417
226,650	546,862	773,512	1953	19,488	17,346	---	---	36,834	809,346
303,550	152,808	456,358	1954	129,737	21,588	---	---	151,325	607,683
444,458	58,852	503,304	1955	200,000	---	---	---	200,000	703,304
3,099,514	554,007	3,653,521	1956	209,388	239,270	2,457	178,609	629,728	4,283,249
1,785,991	915,516	2,701,507	1957	186,147	61,621	---	109,636	357,404	3,058,911
5,510,875	4,243,094	9,753,969	1958	340,240	833,219	2,323	327,638	1,503,420	11,257,389
6,509,535	4,672,410	10,581,945	1959	364,146	1,785,106	6,522	805,085	2,960,859	13,542,804
			1960						
3,596	15,530	19,126	July	---	2,655	---	1,226	3,881	23,007
783,643	116,061	899,704	August	---	82,180	---	202,188	284,368	1,184,072
2,249,268	333,638	2,582,906	September	21,297	60,715	---	107,499	189,511	2,772,417
---	---	---	October	20,845	12,890	---	---	47,965	47,965
3,036,507	465,229	3,501,736	1960 TOTALS	42,142	158,440	---	325,143	525,725	4,027,461

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Pacific Northwest Tuna Packs

(Oregon and Washington - in Standard Cases)

Year	Albacore				Lightmeat				Total	Year
	Solid	Chunks	Flakes	Total	Solid	Chunks	Flakes	Total		
1955	438,945	39,583	105,412	583,940	7,308	209,367	24,760	241,435	680,380	1955
1956	642,218	54,751	123,785	820,754	22,550	378,238	38,862	439,650	1,260,404	1956
1957	561,291	67,510	140,042	768,843	10,484	318,473	11,321	340,278	1,109,121	1957
1958	635,013	69,384	145,459	849,856	9,283	358,104	9,828	377,215	1,227,071	1958
1959	699,385	49,006	141,781	890,172	6,616	371,270	11,403	389,289	1,279,461	1959

unlikely to try the venture again.

The Canadians on the other hand, felt they had found a productive fishery for their rugged high seas herring and salmon seiners; that they had learned a lot about Albacore, their habits, and how to seine them. It seemed altogether probable that the Canadian contingent would again be seining Longfin tuna off the Oregon coast; and that perhaps, providing they install refrigeration, some of them might try their hand at Lightmeat tuna seining in subtropical waters.

- A feature of the purse seining for Albacore in Pacific Northwest waters was the discovery of Bluefin tuna in some quantity at least as far north as Cape Mendocino, the great knuckle on the northern California coast.

While this species of tuna has been reported as far north as Wide Bay, Alaska, commercial quantities are not known hitherto to have been taken above Point Conception, Calif.

In September, 1960, however, a California purse seiner is known to have taken some 60 tons of Bluefin about 50 miles west of Cape Mendocino. These fish averaged more than 100 lbs., and the largest actually measured had a fork length just under 67" and a weight between 200 and 210 lbs.

Albacore fishermen in past years have reported seeing Bluefin in small schools as far north as the Columbia River, but as these fish are caught almost exclusively by means of purse seines in the eastern Pacific no attempt was made to develop a fishery.

Now, with the Canadians and some California vessels interested in seining Albacore off the North Pacific coast, it is possible that Bluefin can be counted with Longfin tuna in assessing the tuna productivity of the area.

- In the Pacific Northwest the Union Fishermen's Cooperative Packing Co., Astoria, Ore., one of the oldest active American salmon canners, greatly expanded its activity in tuna canning, in which it had been a minor operator for a number of years. The company built a large extension to its tuna canning facilities and advanced aggressively after controlling interest in it was acquired early in 1960 by Nick Bez, president of P. E. Harris Company, Inc., and West Coast Airlines.

The year 1960 also brought the announcement that California Packing Corporation, the world's largest canner of fruits and vegetables, would construct a tuna cannery on Puerto Rico at Mayaguez, immediately adjoining the plant of Star-Kist Caribe.

Another notable development in the American tuna business outside of California was the announcement in the first days of 1961 that Castle & Cooke, Ltd., Honolulu, which held controlling interest in Columbia River Packers Association, Inc., one of the largest American tuna canners, would seek to acquire all outstanding stock of that corporation, as well as of The Dole Corporation, perhaps the largest factor in Hawaiian pineapple canning.

World-Wide Tuna

- World-wide aspects of the constantly growing tuna industry are developed in a number of the articles in this Yearbook Number reporting on activities of various nations in this fishery.

For details of tuna development outside the United States, attention is directed particularly toward articles in this volume dealing with Japan, Senegal, France, Norway, Ghana and Brazil.

U. S. Tuna Pack other than Pacific States

(Hawaii. Samoa. Puerto Rico, Atlantic and Gulf States)
In Standard Cases

YEAR	ALBACORE				LIGHTMEAT				TOTAL	YEAR
	Solid	Chunks	Flakes	Total	Solid	Chunks	Flakes	Total		
1955	**	**	**	**	276,829*	343,658*	222,225*	842,712*	842,712	1955
1956	273,262	28,682	19,527	321,471	142,885	348,032	144,035	634,952	956,423	1956
1957	438,035	70,433	44,109	552,577	38,190	693,262	***	731,452	1,284,029	1957
1958	464,537	**	68,163	532,700	110,204	1,013,236	212,468	1,335,908	1,868,608	1958
1959	460,563	**	105,563	566,126	105,154	1,546,461	184,380	1,835,995	2,402,121	1959

*Includes Albacore. **Included with Lightmeat. ***Included with Chunks.

1960-Imports of Canned Bonito to U.S.

(Pounds)

COUNTRIES	Oct. '59	Nov. '59	Dec. '59	Jan.	Feb.	March	April	May	June	July	August	Sept.	TOTAL
Peru	562,000	586,000	1,992,000	635,000	976,000	1,281,000	897,000	685,000	511,000	933,000	1,244,000	648,000	10,950,000
Other Countries	15,000	39,000	67,000	1,000	21,000	22,000	62,000	154,000	28,000	22,000	31,000	45,000	507,000
TOTAL	577,000	625,000	2,059,000	636,000	997,000	1,303,000	959,000	839,000	539,000	955,000	1,275,000	693,000	11,457,000

SARDINES

- Downward swing of California canned sardine production continued in 1960 the movement initiated in the preceding year. With only 661,328 cases canned for the 1960 season, the industry registered one of its low years, although yield was still far above the 1952 and 1953 failures, and the severe dip of 1957.

With poor fishing, selling prices were not attractive, competition was keen, and the California sardine industry, which in the past has canned more than 5,000,000 full cases a year, actually had a smaller pack in 1960 than that of canned Jack mackerel.

- The 1961 California sardine season was another dismal failure. It was not lack of fishing effort, nor bad weather that made the season one of the poorest on record—it was just a plain lack of fish.

From the standpoint of weather and water temperatures, ideal conditions prevailed. Although the fleet was active, excepting for two days over the Thanksgiving holidays, sardines failed to appear in any appreciable quantities and catches were spotty and light.

During 1959, sardines failed to appear in volume throughout the season but appeared in quantity during January and February following the season's December 31 closing. At that time it was reported that consideration was being given to petitioning the California Legislature to change or extend the season presently set by law from Aug. 1 to Dec. 31 in central California and from Sept. 1 through Dec. 31 in southern California. Should the sardine behavior follow the same pattern again this year, a strong possibility exists that some action may be taken to get the season back into balance with the appearance of sardines in California waters.

- Central California canneries received 6,501 tons of sardines in 1960, practically all of which were trucked in from ports to the south. This compares with 15,100 tons for 1959 when 99% of the fish processed in the Monterey Bay area were caught within easy sailing distance of the port, most of them within a two-hour haul.

Southern California received 20,198 tons in 1960 as compared to 19,856 tons the year previous. In fact, 1960 was one of the worst years on record with a total catch of 26,699 tons. A total of 34,956 tons being landed in 1959, 102,536 tons in 1958; 20,455 tons, 1957; and 31,737 tons in 1956.

- Although Aug. 1 supposedly opens the central California sardine season, as has happened so often in the past, not a purse seiner put to sea nor did any cannery get steam up in its boilers.

The Monterey Purse Seiners Association, boat owners group, formed a co-op. Canners ordered so much fish per day from the boat owners group and the orders were filled by members of that association.

A new contract was signed by cannery owners and cannery workers, with women getting a raise of 2¢ per hr. to $1.69; the base rate for men was raised 3¢ to $2.00, and raises of from 4 to 6¢ were given for some classified jobs, making these pay from $2.00 to $2.40 per hr.

The price of sardines for the whole state was set in San Pedro in July when canners, boat owners, and fishermen agreed that boat owners would get $35 per ton for both mackerel which is in season the year 'round and sardines, for which the season opens Sept. 1, a month later than in central California.

Southern California canners agreed to take sardines on a 40 ton minimum limit per night per boat, and 20 tons of mackerel per night, or if a catch was mixed, to take 20 tons per boat of the mixed fish at $35 per ton. This compares with $35 per ton in 1959 for fish landed at the cannery and $60-$50 per ton in 1958 when fishermen had to pay trucking charges from southern points.

Monterey purse seiners and lam-

1960 - CALIFORNIA SARDINE PRODUCTION

Month	Tons Received	Cases 1-lb. Oval 4 doz.	Cases 1-lb. Tall 4 doz	Cases 8-oz Oblong 48	Cases 5-oz. All 100s	Cases Other Sizes	Total Cases Actual Count	Total Standard Cases 48 - 1 lb.	Month
August	2,325	39,257	11,669	58	4,024	484	55,492	54,843	August
September	11,491	130,699	101,039	10,222	34,188	2,410	278,558	273,988	September
October	7,995	100,166	53,224	9,364	30,041	3,961	196,756	191,447	October
November	3,975	59,760	15,864	1,776	20,072	427	97,899	86,412	November
December	1,298	19,920	5,288	592	6,691	132	32,623	28,804	December
1960 TOTAL	27,084	349,802	187,084	22,012	95,016	7,414	661,328	635,494	1960 TOTAL

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para boats finally set out after sardines on the night of Aug. 15, after the ex-vessel price of $35 per ton had been agreed upon. Most canners were reported to have agreed to pay half of any trucking costs, fishermen paying the other half.

Some 115 tons of fish were brought in by the lampara boats. This catch consisted of "homesteaders" — very large fish that are believed to have stayed in Monterey Bay most of their lives, and these fish were picked practically off the beach. Some prospecting was done off Morro Bay and northward, but foggy and rough weather hampered fishing.

● Despite rumors that not all of central California's seven canneries would open, all were ready to go. They were: J. D. Packing Co., San Francisco; Santa Cruz Canning Co., Moss Landing, and Enterprise Packers, San Xavier Fish Packing Co., California Packing Corp., Carmel Canning Co., and Hovden Food Products Corp., Monterey.

For the first time in many years, sardine fishermen of southern California were out fishing as their season began Sept. 1.

In previous years, prices offered by canners have been lower than fishermen have felt like fishing for, and they have lost the early season fishing.

In 1960, however, the $35 per ton price offered by canners was satisfactory to boat owners and fishermen, and they were on the fishing grounds as the first day of the season dawned.

Before the beginning of the sardine season, mackerel fishermen were again fishing after a tie-up which had lasted since early April when the fleet stopped fishing because no orders were forthcoming from canners on Terminal Island. With orders again coming in for mackerel, the mackerel boats sailed early in August to resume fishing.

As of Sept. 9 Monterey purse seiners had delivered 1,420 tons of sardines to California canneries. This compares to 792 tons for the same period in 1959, but in that year Monterey fishermen didn't fish in August at all, while in 1960 they started Aug. 15.

Some 28,400 cases had been packed in Monterey and San Francisco to Sept. 9. Prices being quoted were No. 1 natural 48's, $5.75-$6.00, and ovals, tomato sauce 24's, $3.80-$3.90.

As the month progressed fishermen were being hampered by choppy seas and fog. One night plenty of fish would be sighted — the next night they'd be on the beach where fishermen couldn't get at them.

Fish were coming into San Fran-

California Sardine Industry

	Catch, Tons	Oil, Gallons	Meal, Tons	Case Pack, 1-lb. Ovals or Equiv.
1945-46 SEASON				
San Francisco District	83,483	3,581,808	12,765	456,001
Monterey District	142,282	4,803,560	20,297	1,220,579
San Pedro - San Diego District	170,325	2,846,216	23,481	2,073,963
Season TOTALS	396,090	11,231,584	56,543	3,750,543
1946-47 SEASON				
San Francisco District	2,846	65,002	519	6,590
Monterey District	26,818	755,674	3,893	155,329
San Pedro - San Diego District	198,052	3,314,193	26,870	1,931,544
Season TOTALS	227,716	4,134,869	31,182	2,093,463
1947-48 SEASON				
San Francisco District	383	4,440	37	5,793
Monterey District	14,492	260,375	1,756	222,867
San Pedro - San Diego District	95,362	1,458,983	11,762	1,258,660
Season TOTALS	110,237	1,723,798	13,555	1,487,320
1948-49 SEASON				
San Francisco District	1,688	16,590	127	34,197
Monterey District	52,203	783,627	5,566	914,624
San Pedro - San Diego District	127,350	1,436,939	13,301	2,113,897
Season TOTALS	181,241	2,237,156	18,994	3,062,718
1949-50 SEASON				
San Francisco District	17,798	607,004	2,917	81,040
Monterey District	133,570	3,431,286	17,513	1,606,767
San Pedro - San Diego District	186,392	2,402,760	23,343	2,632,305
Season TOTALS	337,760	6,441,050	43,773	4,320,112
1950-51 SEASON				
San Francisco District	---	538,132	2,408	67,698
Monterey District	---	1,132,643	6,443	759,172
San Pedro - San Diego District	---	4,802,054	34,660	4,444,120
Season TOTALS	---	6,472,829	43,511	5,270,990
1951-52 SEASON				
San Francisco District	321	6,350	32	4,342
Monterey District	24,864	327,149	2,217	495,542
San Pedro - San Diego District	101,356	1,121,770	10,855	1,867,978
Season TOTALS	126,541	1,455,269	13,104	2,367,862
1952-53 SEASON				
San Francisco District	---	----	--	---
Monterey District	285	2,345	14	5,740
San Pedro - San Diego District	3,330	15,529	186	64,819
Season TOTALS	3,615	17,874	200	70,559
1953-54 SEASON				
San Francisco District	---	----	--	---
Monterey District	58	410	3	1,335
San Pedro - San Diego District	2,568	12,218	161	61,622
Season TOTALS	2,620	12,628	164	62,957
1954-55 SEASON				
San Francisco District	814	4,550	45	18,883
Monterey District	8,674	86,032	567	192,525
San Pedro - San Diego District	57,654	669,922	5,926	1,180,517
Season TOTALS	67,142	760,504	6,538	1,391,925
1955-56 SEASON				
San Francisco District	2,522	21,114	185	55,686
Monterey District	14,133	168,796	1,143	313,255
San Pedro - San Diego District	56,535	690,106	5,763	1,162,605
Season TOTALS	73,190	880,016	7,091	1,531,546
1956-57 SEASON				
San Francisco District	836	----	--	18,236
Monterey District	5,787	49,410	330	124,393
San Diego District	25,114	276,703	2,585	590,052
Season TOTALS	31,737	326,113	2,915	732,681
1957 SEASON*				
San Francisco District	877	2,115	24	22,030
Monterey District	8,281	33,813	383	185,593
San Diego District	11,332	44,087	935	271,660
Season TOTALS	20,490	80,015	1,342	479,283
1958 SEASON				
San Francisco District	2,799	29,793	241	74,253
Monterey District	21,181	230,905	1,773	487,881
San Pedro - San Diego District	77,587	554,830	7,481	1,694,463
Season TOTALS	101,567	815,528	9,495	2,256,597
1959 SEASON				
San Francisco District	1,780	15,720	134	44,088
Monterey District	13,290	119,704	1,104	308,864
San Pedro - San Diego District	20,294	84,646	1,765	424,548
Season TOTALS	35,364	220,070	3,003	777,500

*For 1957 and following years seasonal records are included in one calendar year, instead of in portions of two years as formerly recorded. The sardine season now closes statewide on the last day of December.

CALIFORNIA CANNED SARDINE PACK

(Cases)

YEAR	MONTEREY AND SAN FRANCISCO BAY DISTRICT							SAN PEDRO DISTRICT						SAN DIEGO DISTRICT TOTAL	GRAND TOTAL	YEAR
	1-lb. Ovals	1-lb. Talls	½-lb. Cans Misc.	½-lb. Fillets	5-oz. Talls	Other Sizes	TOTAL	1-lb. Ovals	1-lb. Talls	½-lb. Cans Misc.	5-oz. Talls	Other Sizes	TOTAL			
1912	17,702	. . . .	. . . .	. . . .	. . . .	1,072	18,774	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	18,774	1912
1913	73,686	. . . .	. . . .	. . . .	. . . .	. . . .	73,686	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	73,686	1913
1914	80,834	. . . .	. . . .	. . . .	. . . .	. . . .	80,834	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	80,834	1914
1915	46,625	. . . .	. . . .	. . . .	. . . .	609	47,234	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	47,234	1915
1916	97,100	. . . .	. . . .	. . . .	. . . .	8,532	105,632	2,512	. . . .	. . . .	. . . .	3,296	5,808	54,655	166,095	1916
1917	331,065	. . . .	. . . .	. . . .	. . . .	29,809	363,472	131,347	. . . .	. . . .	. . . .	546,033	679,120	147,602	1,190,194	1917
1918	593,448	. . . .	. . . .	. . . .	. . . .	26,151	619,609	325,587	. . . .	. . . .	. . . .	433,374	758,961	106,418	1,484,979	1918
1919	805,834	. . . .	. . . .	. . . .	. . . .	27,084	832,968	125,784	. . . .	. . . .	. . . .	105,741	231,514	87,033	1,151,515	1919
1920	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	706,726	. . . .	. . . .	. . . .	. . . .	. . . .	244,900	111,370	1,062,996	1920
1921	287,954	. . . .	. . . .	. . . .	. . . .	10,975	298,929	77,048	. . . .	. . . .	. . . .	3,765	80,813	9,370	389,112	1921
1922	353,188	. . . .	. . . .	. . . .	. . . .	1,479	354,667	340,938	. . . .	. . . .	. . . .	6,096	347,034	27,140	729,034	1922
1923	580,984	. . . .	. . . .	. . . .	. . . .	10,001	590,985	490,064	. . . .	. . . .	. . . .	2,769	492,833	48,205	1,132,023	1923
1924	631,774	. . . .	. . . .	. . . .	. . . .	22,416	654,190	693,133	. . . .	. . . .	. . . .	4,491	697,624	63,624	1,420,128	1924
1925	737,743	. . . .	. . . .	. . . .	. . . .	37,119	774,862	920,191	. . . .	. . . .	. . . .	2,685	922,876	56,041	1,753,779	1925
1926	1,158,133	. . . .	31,483	. . . .	. . . .	2,867	1,192,483	861,088	. . . .	. . . .	. . . .	21,702	861,481	88,419	2,163,755	1926
1927	1,341,872	. . . .	36,363	237	17,808	826	1,397,106	1,046,453	. . . .	. . . .	119,815	. . . .	1,166,268	62,038	2,625,412	1927
1928	1,511,535	4,569	43,754	159	80,252	2,495	1,642,764	945,676	9,652	. . . .	146,724	. . . .	1,099,052	73,514	2,815,330	1928
1929	2,039,526	54,618	16,969	11	75,101	2,187	2,188,412	1,438,159	76,271	8,072	168,039	33,753	1,724,294	28,753	3,941,459	1929
1930	1,579,408	74,043	19,692	391	141,524	3,751	1,818,809	863,254	106,460	2,909	228,965	8,138	1,209,726	40,989	3,069,524	1930
1931	1,004,215	43,722	11,280	. . . .	40,375	337	1,099,929	498,996	59,853	11,931	119,930	1,467	691,637	3,425	1,794,991	1931
1932	459,756	4,467	3,276	88	17,726	2,528	487,481	415,874	36,292	. . . .	54,197	. . . .	506,363	7,641	1,001,845	1932
1933	838,533	47,575	4,604	. . . .	38,013	1,532	930,217	365,750	57,969	. . . .	53,996	4,336	482,051	10,592	1,422,860	1933
1934	1,091,158	48,769	6,527	8,361	67,913	2,675	1,225,413	531,619	119,506	. . . .	164,735	. . . .	815,860	10,463	2,051,736	1934
1935	1,126,466	218,523	39,566	91,525	128,168	27,704	1,631,952	615,808	135,531	25,519	112,264	251	889,373	11,437	2,532,762	1935
1936	1,089,683	202,148	89,280	113,516	124,490	41,946	1,661,063	586,038	259,793	132,488	156,649	749	1,135,717	22,863	2,819,643	1936
1937	679,317	227,806	51,068	73,785	68,164	9,284	1,109,424	761,776	634,215	263,729	200,060	1,509	1,861,289	12,491	2,983,204	1937
1938	721,036	58,168	104,419	97,277	154,488	16,287	1,151,675	600,532	318,691	212,064	162,245	. . . .	1,293,532	19,056	2,464,263	1938
1939	1,248,747	310,168	125,251	141,900	138,217	28,538	1,992,821	627,524	308,896	217,100	178,072	1,520	1,333,112	229	3,326,162	1939
1940	933,955	249,195	158,300	151,518	225,975	18,384	1,737,327	664,241	398,960	230,771	156,681	72	1,450,725	37	3,188,089	1940
1941	1,601,506	1,092,720	234,093	182,703	296,568	54,961	3,462,551	689,210	870,256	216,972	151,384	2,136	1,929,958	2,775	5,395,284	1941
1942	802,795	663,309	8,283	75,386	94,755	59,695	1,704,223	619,881	1,342,030	85,776	90,672	2,918	2,141,277	1,285	3,846,785	1942
1943	1,045,451	832,934	128,438	. . . .	20,208	36,037	2,063,068	400,504	846,314	44,516	26,507	2,235	1,320,076	697	3,383,841	1943
1944	1,051,397	1,088,918	61,828	20,584	374	18,255	2,241,356	434,414	963,551	23,297	. . . .	1,040	1,422,302	. . . .	3,663,658	1944
1945	766,554	951,346	81,019	10,075	. . . .	102,391	1,911,385	444,649	1,480,175	48,215	. . . .	. . . .	1,973,039	. . . .	3,884,424	1945
1946	123,063	171,698	39,376	10,233	. . . .	9,050	353,420	602,008	2,073,679	73,125	. . . .	. . . .	2,748,812	. . . .	3,102,232	1946
1947	108,289	71,691	72,995	155,677	. . . .	4,181	412,833	510,760	802,243	29,327	57,260	. . . .	1,399,590	1,627	1,814,050	1947
1948	400,841	197,865	527,346	16,645	. . . .	994	1,143,691	611,927	970,569	347,991	120,413	. . . .	2,050,900	6,587	3,201,178	1948
1949	869,104	491,196	344,148	12,434	127,741	6,291	1,850,914	822,053	1,112,939	194,690	305,438	. . . .	2,435,120	. . . .	4,286,034	1949
1950	427,416	224,569	6,533	44,843	99,657	24,179	827,197	1,476,695	2,256,213	355,087	451,365	63,882	4,603,242	. . . .	5,430,439	1950
1951	377,754	75,721	2,785	12,285	95,257	7,120	570,922	1,030,080	971,971	74,273	368,611	36,785	2,481,720	. . . .	3,052,642	1951
1952	5,730	10	. . . .	. . . .	. . . .	. . . .	5,740	60,116	34,694	1,513	1,317	2,450	100,090	. . . .	105,830	1952
1953	1,335	. . . .	. . . .	. . . .	. . . .	. . . .	1,335	41,340	18,902	1,773	679	55	62,794	. . . .	64,084	1953
1954	123,215	12,256	65	155	30,516	. . . .	216,207	571,945	488,981	39,426	91,377	29,292	1,221,021	. . . .	1,437,228	1954
1955	292,234	61,128	. . . .	4	3,887	11,340	368,593	578,551	334,740	89,323	164,880	1,706	1,169,200	. . . .	1,537,793	1955
1956	97,760	32,945	. . . .	. . . .	6,712	1,260	138,677	326,852	211,849	22,313	82,059	17,900	660,973	. . . .	799,650	1956
1957	187,819	21,927	2,032	. . . .	. . . .	3,362	215,140	208,949	32,995	9,247	56,897	. . . .	308,088	. . . .	523,228	1957
1958	345,159	134,868	28,930	. . . .	74,885	384	584,226	546,446	819,199	104,495	232,227	52,264	1,754,631	. . . .	2,338,857	1958
1959	226,227	84,667	. . . .	1,518	29,887	1,729	344,028	235,967	131,981	65	44,223	. . . .	412,236	. . . .	756,264	1959
1960	108,226	27,533	. . . .	206	12,718	1,033	149,716	241,576	159,550	21,806	82,298	6,382	511,612	. . . .	661,328	1960

NOTE: Figures for 1960 are preliminary totals from official sources. Those for previous years have been corrected from statistics of the California Division of Fish and Game.

Full segregation of the various sizes is not available for years prior to 1926 and is estimated for 1960.

*Where sizes are not segregated, they are combined with 1-lb. Talls, Figures for 1960 are given in cases "as they run", without reduction to standard cases. The great majority of the production, however, consists of 48-lb. cases. Figures for "Other Sizes" have been reduced to standard cases, equivalent to cases of 48 - 1-lb. ovals.

cisco by truck, and to Monterey both by truck and by boat. Fish being trucked in were landed at Morro Bay. What fish were caught were of good size—four and five year old fish.

- The fourth week end in September saw a sudden, spectacular sardine bonanza in southern California. The 2,300 tons landed on Sept. 23 was by far the biggest day's catch of the season.

Sardine tonnage delivered to southern California canneries to the end of September was running about 10 times that received to the same period in 1959, although still far below 1958 production to that period.

Halfway through the season central California sardine fishermen and canners were facing a most disappointing season. At that point only 3,737 tons had been processed at Monterey and San Francisco, as compared to 6,639 tons in 1959 and 16,035 tons in 1958.

What fish were being canned were being trucked in to central California canneries from Santa Barbara and Port Hueneme. It was said that early signs of fish in Monterey Bay and near Monterey had disappeared altogether. Fishing off Santa Barbara was hampered by rough weather.

The pack in central California to Oct. 18 was approximately 74,740 cases, as compared to 133,780 cases in the same period in 1959, and 320,700 cases in 1958.

- Canned sardine prices were much higher than in 1959, according to California Street observers. Ovals 24s were selling for around $3.80 to $3.90, and talls, natural, about $5.50. The export market was still slow.

The November dark augured no better fishing for central California's sardine fishermen, who were by then bringing practically all their catches in to Port Hueneme.

As the dark opened only 5,594 tons had been processed by San Francisco and Monterey Bay plants, as compared to 9,307 tons in 1959, and 18,790 tons in 1958.

Fishermen reported no fish from Monterey to Morro Bay, and what fish they were catching seemed to be landed by only two or three of the Monterey boats. The fish were being trucked from Port Hueneme to Monterey Bay plants, and San Francisco.

According to observers, the fish seemed to be wild and too close in to shore to be caught.

Only about 111,880 cases of fish had been packed in central California compared to 186,140 cases in 1959, and 375,800 cases in 1958.

Even with this short pack the demand for sardines was only fair, ac-

CALIFORNIA CANNED FISH PACKS

YEAR	Albacore Cases	Tuna-Bluefin Cases	Tuna-Skipjack Cases	Tuna-Yellowfin Cases	Tuna-Chunks Flakes	Tuna-Tonno Cases	Bonito Cases	Yellowtail Cases	Mackerel Cases	Salmon Cases	Sardine Cases	Shad Cases	Squid Cases	Pet Food Cases	Misc. Cases	TOTAL CASES	YEAR
1926	66,001	70,283	274,970	165,561	8,162	131,553	44,186	18,940	550	11,761	2,163,755	.....	23,536	.....	63,794	3,043,052	1926
1927	126,699	50,008	382,175	366,395	7,631	207,496	22,277	24,530	10,961	8,435	2,625,412	6,485	.....	.....	44,396	3,882,900	1927
1928	99,751	132,342	194,491	503,077	16,733	117,821	18,900	5,657	388,471	4,585	2,815,330	7,475	2,056	.....	124,809	4,431,498	1928
1929	132,638	89,728	347,132	612,810	18,613	119,805	47,674	15,296	611,503	5,503	3,941,459	9,791	6,056	.....	53,925	6,012,433	1929
1930	145,531	309,604	268,130	878,382	29,561	74,985	69,341	21,343	127,333	11,202	3,069,524	1,796	25,271	.....	127,236	5,159,239	1930
1931	144,973	46,462	278,398	613,344	19,441	36,220	38,254	2,041	101,217	14,070	1,794,991	.....	19,827	44,372	4,855	3,158,465	1931
1932	65,377	8,687	305,007	678,313	16,291	42,247	42,114	3,115	89,176	2,005	1,001,845	201	.....	67,256	50	2,323,052	1932
1933	49,391	7,581	273,041	937,792	13,090	41,200	36,560	33,518	760,126	3,076	1,422,860	.....	1,740	112,725	1,369	3,698,293	1933
1934	82,182	332,411	267,328	1,097,912	30,502	55,163	52,554	9,816	1,214,491	820	2,051,726	.....	4,257	80,224	1,104	5,324,084	1934
1935	112,149	438,501	338,493	1,254,478	41,658	82,205	128,065	81,177	1,761,186	874	2,529,262	5,039	8,781	122,826	2,269	6,920,625	1935
1936	53,884	334,377	480,260	1,418,045	24,873	58,537	104,078	112,128	1,228,348	.....	2,820,742	13,124	12,282	128,384	5,178	6,803,815	1936
1937	91,159	215,535	763,916	1,582,477	50,438	137,737	129,572	47,480	793,780	147	2,983,204	6,361	5,531	179,230	100	6,986,616	1937
1938	289,389	324,198	372,998	1,284,179	64,476	67,404	125,854	71,234	958,890	.....	2,443,469	11,244	20,167	287,403	545	6,341,557	1938
1939	356,675	218,476	469,570	1,927,292	72,240	77,340	159,090	24,614	968,718	.....	3,326,162	12,665	23,926	384,427	150	8,021,345	1939
1940	145,741	313,210	836,223	2,005,819	227,320	184,232	87,367	68,482	1,435,113	.....	3,188,089	15,743	34,603	832,091	100	9,374,133	1940
1941	92,240	168,702	433,029	1,325,645	170,549	33,838	176,859	129,307	843,747	1,125	5,395,284	68	21,587	1,027,903	16	9,820,485	1941
1942	239,505	279,098	719,574	759,908	150,976	23,479	32,288	37,392	614,090	.....	3,846,785	24,945	941	197,403	.....	6,941,643	1942
1943	425,741	174,865	383,167	696,209	502,515	26,599	35,625	73,268	839,312	1,475	3,400,106	11,516	119,237	.....	11,131	6,699,736	1943
1944	435,123	374,004	363,857	827,483	757,800	15,365	8,490	19,848	986,422	1,691	3,725,657	12,541	141,808	.....	45,206	7,738,949	1944
1945	480,615	297,858	548,174	1,497,991	548,454	16,198	49,816	17,336	589,617	5,457	3,884,582	.....	184,141	.....	225,971	8,346,210	1945
1946	381,271	333,001	648,289	2,213,692	826,793	.....	108,306	44,045	716,668	9,817	3,102,232	589	643,843	.....	56,689	9,085,235	1946
1947	286,272	370,893	904,451	2,642,354	742,038	33,762	243,994	133,734	1,522,199	18,754	1,814,050	1,778	229,967	1,087,040	199,115	10,230,401	1947
1948	797,035	98,473	930,235	3,335,759	850,760	22,663	158,253	153,428	971,646	22,786	3,203,028	2,477	369,762	1,153,802	204,741	12,274,848	1948
1949	861,737	46,336	1,068,215	2,694,947	1,762,223	82,859	20,312	53,767	924,104	1,801	4,286,034	893	88,217	1,249,366	20,265	13,161,076	1949
1950	1,125,463	11,186	734,528	1,632,625	4,497,839	257,356	8,263	14,073	1,410,541	4,279	5,430,439	1,948	84,675	2,060,709	85,827	17,359,751	1950
1951	607,230	.....	.....	1,586,142	4,793,574	162,277	14,356	87,489	1,040,300	1,266	3,052,642	1,078	224,884	1,593,176	431,465	13,595,879	1951
1952	962,063	.....	.....	1,547,310	5,443,228	129,502	46,509	181,261	1,573,745	3,115	109,633	1,375	1,616	1,751,006	724,522	12,474,885	1952
1953	1,215,362	.....	.....	1,352,438	5,710,186	176,002	69,638	100,480	598,305	4,931	64,084	4,911	166,612	1,692,796	1,202,769	12,358,514	1953
1954	1,092,313	.....	.....	1,592,457	6,698,302	180,166	44,603	30,932	383,500	2,162	1,437,228	1,997	134,718	1,892,187	469,814	13,960,379	1954
1955	1,285,249	.....	.....	1,251,199	5,805,631	202,880	2,739	1,980	564,672	2,954	1,537,793	.....	284,890	2,378,366	478,934	13,797,287	1955
1956	1,029,810	.....	.....	1,288,516	7,240,023	177,492	1,605	4,889	1,131,462	3,189	799,650	3,976	387,297	3,099,589	668,208	15,835,706	1956
1957	1,227,593	.....	.....	1,067,147	7,255,699	166,717	3,375	4,913	1,360,688	2,174	523,228	859	261,097	3,399,763	528,965	15,802,218	1957
1958	955,344	.....	.....	1,086,067	8,093,554	174,313	108,563	836	404,320	1,005	2,338,857	.....	107,693	3,562,199	67,795	16,900,536	1958
1959	1,112,739	.....	.....	973,013	8,985,442	182,161	57,071	449	616,028	1,014	797,573	.....	350,985	3,782,504	6,867	16,865,846	1959

Bluefin, Skipjack and Yellowfin are combined under Yellowfin from 1951. Cases are as they run.

cording to market authorities. They said that domestic buyers wouldn't pay current prices, and California packers can't compete in foreign markets. Ovals were selling for $7.25-$7.50, and talls, natural, $5.50-$5.75.

Southern California's sardine fishing fell off to a trickle in November. Following the light of the moon period, which extended from the first to the fifth, the biggest day's catch was 440 tons on the eighth.

Although the 1960 season in southern California got off to a month's earlier start than 1959's, the total caught to Nov. 17, inclusive, was only 3,000 tons more than 1959's to even date—17,628 tons to 14,896. Neither figure was anywhere near the 64,939 tons received in the same period of 1958, when the sardine fishery flashed into something like its former volume.

While the southern California receipts were 3,000 tons better than in 1959, this advantage was more than counterbalanced by even lower deliveries to San Francisco and Monterey, so the total California receipts for the year to the middle of November were less by more than 2,000 tons for the same period in 1959. The figures: 23,452 tons received to date in 1960; 25,600 to date in 1959.

● When the 1960 sardine season opened the 1959 pack was almost gone, the price for the remainder was being quoted as ovals, tomato sauce (24s), $4.25-$4.75, and talls, natural, $6.25.

At that time observers stated in San Francisco that there was some interest in the new pack but at prices which failed to arouse any enthusiasm among packers as far as the export trade was concerned. The export trade still remained the most important market for California sardines.

Japanese sardines were reported to be selling in the Philippines for $7.75 (48s) in wooden cases. In order to compete California packers would have to put sardines in Manila at about $7.00 per case f.o.b. Since it costs about $1.30 to ship California sardines in fibre cases to the Islands it is obvious that California canners can't compete.

Another depressing factor was the fish meal market. In 1959 when the California sardine season opened fish meal was selling at around $2.10-$2.15 per protein unit. In August, 1960, meal was selling for $1.55-$1.60. This coupled with increased costs along all fronts to canners, puts California sardine packers in a most disadvantageous position as far as competition in foreign markets goes.

As the season progressed, and it became apparent that there would be no glut of canned sardines, the price steadily went upward, until when the season closed Dec. 31, ovals were being quoted at $8.25 per case (48s), and talls, natural, $6.25.

In spite of the shortage of fish, market interest was only moderate. Competition from foreign sources still was cutting deeply into the potential market, and because of the steadily increasing cost of production California processors were finding it increasingly difficult to compete in foreign markets.

Japanese and South African sardines still dominated the markets formerly held by California sardines.

● California's sardine resource is again giving serious concern to fishermen and canners, and to the California Marine Research Committee which coordinates the sardine investigation.

The Marine Research Committee in October held a formal meeting and took a close look at the sardine research program being carried out by the California Co-Operative Ocean Fisheries Investigation.

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HAWAII

- Coming of statehood to Hawaii required virtually no change in administration of the fisheries resource—in sharp contrast to the situation in Alaska, where control of the fisheries had been wholly in the hands of the federal Department of Interior in the territorial period.

In Hawaii the only change was one of nomenclature, from "Board of Agriculture and Forestry" to "Department of Agriculture and Conservation," which includes the Division of Fish and Game. Michio Takata is divisional director.

The division is organized for three main functions: Fisheries; Wildlife; and Enforcement and Education.

- Regulatory authority is granted by Hawaiian law to the Board of Agriculture and Conservation, with control over inland and marine waters within jurisdiction of the state.

The state division participates actively in a number of enterprises designed to introduce desirable species into Hawaiian waters. Of particular importance in this area are the efforts to increase the supply of bait fish for local *Aku* or Skipjack fishermen by the introduction of suitable species from other areas.

This undertaking has been going on for years as a cooperative project between Hawaiian Tuna Packers, Ltd., the Division of Fish and Game, and the United States Bureau of Commercial Fisheries, which maintains an important mid-Pacific project with headquarters in Hawaii, and also the Honolulu Biological Laboratory.

Three species have shown particular promise in this project. These are:

Tilapia, which is grown widely throughout the tropics in pond fish culture, and which is thoroughly hardy, tolerant of either fresh or salt water with a minimum of acclimitization, and proven suitability for tuna bait purposes. Its principal drawback for this purpose lies in its growth characteristic which rather quickly carries it to size larger than that acceptable in a bait fish.

Marquesan sardine—which is the standard bait fish for tuna in enormous areas of the Pacific. Cargoes of these sardines were brought from the Marquesas in the bait tanks of federal research vessels and liberated in Hawaiian coastal waters. Recent regular discoveries of small fish of this species give proof that the introduced sardines have reproduced successfully in their new environment, and may possibly increase to the point where they will provide an important bait supplement for the *Aku* fishermen.

Threadfin Shad is a recently-introduced species from the Salton Sea in California. Because of its ready adaptability to either fresh or salt water and its size, character and color, it is expected to prove exceptionally suitable for bait fish purposes, as well as amenable to fish cultural practices.

- While Hawaiian sea fisheries produce a wide variety of fish, which are in strong demand in island markets, *Aku* or Skipjack tuna easily dominates the catch in tonnage and value.

An easy second is the Bigeye tuna, with which Bluefin are often classed in statistical reports.

Yellowfin tuna, known in the Islands as *Ahi,* ranks third in volume landed. These latter species of tuna generally are taken by the longline method which also produces marlins, swordfish, sailfish and others of the spearfish group.

Hawaiian *Aku* is the Oceanic Skipjack, differing greatly in size at least from the type taken by tuna vessels along the coast of central and South America, where Skipjack often weigh no more than 4 or 5 lbs. In Hawaiian waters the Oceanic Skipjack exceed 20 lbs. in average weight, with 30-lb. specimens common, particularly during the summer months.

- Total 1960 landings of Skipjack tuna by the Hawaiian commercial fishermen was 7.3 million pounds; 5.1 million pounds landed during the months of May through September, (the "season"), 2.2 million during the remainder of the year.

Honolulu Biological Laboratory prediction for the landings was for a poorer than average year. The average landings for the past 11 years was 10.0 million pounds. The lowest total during this period was for 1957, 6.1 million pounds; the highest for 1954, nearly 14.0 million pounds.

The peak month, on the average, is July, with 1.9 million pounds. During 1960, the landings during July were 1.4 million pounds. This is to be compared with 3.7 million pounds for July of 1954 (the highest) and 0.9 million pounds for July, 1957 (the lowest).

The catch per boat during 1960 averaged 365,000 pounds as compared with an average of 385,000. The lowest average catch per boat, 1948 through 1960, was 245,000 pounds for 1957, the highest, 591,000 in 1959.

The HBL prediction is based on the late-winter change in surface temperature, the time of reversal from cooling to warming. Although the prediction has been valid for three years, and by hind-casting for eight additional years, it is empirical and does not consider the biology of the Skipjack which, each spring, enter Hawaiian waters. These variations in catch may arise from variations in year-class size or from variations in the availability of the fish to the fishery.

Information leading to estimates of year-class size is obtained through the study of the distribution of Skipjack landed at the Honolulu cannery.

- Hawaii is an avid market for many kinds of fish, and in spite of its oceanic location probably is a net importer of fish and fish products.

The only significant export is in canned tuna, largely Oceanic Skipjack, but including also other species imported frozen, principally from Japan. Such imports permit the Honolulu plant of Hawaiian Tuna Packers, Ltd., to operate on a continuous basis in spite of the wide fluctuations in the landings of *Aku*, thus making a very real contribution to employment and the Hawaiian economy.

- Expansion of facilities for production of tilapia for tuna bait is one of the 1961 enterprises scheduled by the Hawaii Department of Fisheries, which plans an expenditure of $131,000 for this project on Sand Island, located in the Honolulu area and adjacent to the proposed Kalihi Entrance Channel to Honolulu harbor.

Completion of the project was scheduled during the first half of 1961, in time to permit furnishing bait to tuna fishermen during the peak of tuna fishing demand during the mid-summer months.

Plans for the tilapia station call for nearly 100 breeding and rearing tanks, with an estimated production of about 32,000 lbs. of live bait annually. This is estimated to be about 15% of the Honolulu tuna fleet's annual bait requirements.

The station will be provided with a pier to permit fishing vessels to lie alongside the rearing tanks so the bait can be transferred with a minimum of handling. Thus there will be little loss of time in taking bait, which is to be provided to the fishermen at a nominal price.

Where it is necessary to fish wild native nehu for bait, tuna fishing vessels are said to require from two to three days in order to secure sufficient bait to support a profitable fishing trip.

- Apart from introduction of species of small fish for tuna bait, the Hawaii State Division of Fish and Game also is interested in species which might contribute to the economic and recreational facilities of the Islands. Perhaps the most recent of these carefully-studied introductions involved the planting in Hawaiian waters of a number of abalone transplanted from California.

- United States Bureau of Commercial Fisheries maintains a Regional Project headquarters in Hawaii with Vernon E. Brock as director. The associated Honolulu Biological Laboratory has Dr. John C. Marr as director.

These agencies of the federal government have their headquarters on the campus of the University of Hawaii and in addition have a fleet headquarters, gear warehouse and fish cultural facilities at Kewalo Basin, Honolulu, where the state's commercial fishing activities center.

University of Hawaii's standing in marine zoology is widely accepted throughout the academic world, the department being directed by Dr. Albert Tester, formerly chief of the fisheries biological branch of the United States Fish and Wildlife Service.

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MACKEREL

● Mackerel canning boomed to 973,819 cases in California in 1960, up from 616,028 in 1959.

The gain was all in Jack mackerel, the pack of which was more than doubled from the preceding year, with a 1960 total of 671,854 cases against 310,342 in 1959.

Pacific mackerel, on the other hand, failed to maintain its position, although its decline to 301,965 cases was a nominal one from the 305,686 cases of the preceding year.

● Notably, the strong gain in Jack mackerel production in California reflected a similar trend in Japan, where the production of this canned fish item was exceptionally good. While this should not necessarily be taken to be of biological significance, it can be of importance from the marketing point of view, particularly in the oriental export area.

Lacking sardines in consistent quantity during the fall months of 1960, California seiners sought schools of other "wet fish" and took substantial quantities of mackerel, often in the form of "mixed fish", including both Pacific and Jack mackerel.

● Some 545 tons of anchovies were landed at central California canneries during 1960, and 16,474 cases were packed. In southern California 1,825 tons of anchovies were brought in but none were packed.

In 1959 4,009 cases of anchovies were packed in the state; 1958, 45,625 cases; and 1957 416,402 cases. The big year was 1953 when 1,077,884 cases were packed.

With such a small pack there was not much action in marketing the fish. The price remained fairly stable at, ovals, 48s, $7.00-$7.50, and 5-oz. tomato, $6.25.

The reason for the small catch and pack was that there was no demand for canned anchovies. The primary markets had been export, and with fish from other sources, being produced at lower costs than California canned anchovies, packers were not particularly interested.

A year ago jack mackerel was selling for around $7.00 per case, tall, natural, but last season, sardine canners in order to get sardines also took mackerel, which only has a domestic market, and the price was quickly depressed, as the year ended to $5.50-$5.75 for jack mackerel, and $5.75-$6.00 for Pacific mackerel.

About 1109 tons of jack mackerel were landed in central California and 33,511 tons in southern California, for a total catch for the year of 34,620 tons, as 17,684 tons in 1959.

The Pacific mackerel catch was 103 tons landed in Monterey, and 17,196 tons in southern California, for 1960, for a total of 17,299 tons. The total catch for 1959 was 288,845 tons.

Of the 1960 catch 13,729 cases were packed by central California canneries and 263,571 cases in southern California canneries.

1960 California Mackerel Pack

PACIFIC MACKEREL				MONTH	JACK MACKEREL				All Mackerel Cases
Tons Delivered	Cases 1-lb. Cans	Cases Other Sizes	Total Cases		Tons Delivered	Cases 1-lb. Cans	Cases Other Sizes	Total Cases.	
1,691	26,169	...	26,169	January	5,483	91,642	6,957	98,599	124,768
954	16,422	1,442	17,864	February	2,452	27,019	13,839	40,858	58,722
1,247	27,511	...	27,511	March	7,830	123,233	2,117	125,350	152,861
375	7,210	...	7,210	April	2,004	27,003	6,201	33,204	40,414
674	126	153	279	May	1,431	1,431	1,445	2,876	3,155
223	10	...	10	June	555	5,114	...	5,114	5,124
367	244	...	244	July	338	...	...	...	244
2,046	28,772	...	28,772	August	2,479	41,230	410	41,640	70,412
2,719	47,352	...	47,352	September	3,263	67,150	1,051	68,201	115,553
4,544	86,385	...	86,385	October	3,091	63,921	2,858	66,779	153,164
1,803	35,643	...	35,643	November	6,800	129,139	12,116	141,255	176,898
1,148	23,526	1,000	24,526	December	2,674	45,251	2,727	47,978	72,504
17,791	299,370	2,595	301,965	TOTALS	38,400	622,133	49,721	671,854	973,819

California Mackerel Production by Species

Year	PACIFIC MACKEREL			Total Cases All Mackerel	JACK MACKEREL			Year
	Central California	Southern California	Total Pacific Mackerel		Total Jack Mackerel	Southern California	Central California	
1948	7,269	381,732	389,001	971,646	582,645	429,923	152,722	1948
1949	994	506,424	507,418	924,104	416,686	362,977	53,709	1949
1950	4,155	371,055	375,210	1,410,541	1,035,331	707,858*	327,473	1950
1951	5,448	365,956	371,404	1,040,300	668,896	650,274	18,622	1951
1952	2,509	216,011	218,520	1,573,745	1,355,225	1,335,416	19,809	1952
1953	....	71,222	71,222	598,305	527,083	516,839	10,244	1953
1954	14,495	213,452	227,947	383,500	155,553	80,057	75,496	1954
1955	12,012	194,520	206,532	564,672	358,140	272,658	85,482	1955
1956	102,687	370,071	472,758	1,131,462	658,704	528,317	130,387	1956
1957	117,579	365,500	483,079	1,306,688	877,609	648,182	229,427	1957
1958	14,531	174,360	188,891	404,320	215,429	127,706	87,723	1958
1959	25,779	279,907	305,686	616,028	310,342	176,299	134,043	1959
1960	*	*	301,965	973,819	671,854	*	*	1960

*Regional segregation not available.

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OFFICIAL

International

Inter-American Tropical Tuna Cocmission, Scripps Institute of Oceanography, La Jolla, Calif. — Chairman, Jose L. Cardona-Cooper; Director of Investigations, Dr. M. B. Schaefer.

International North Pacific Fisheries Commission, 6640 N. W. Marine Drive, Vancouver 8, B. C.—Chairman Iwao Fujita, Japan; Executive Director, Roy I. Jackson.

International Pacific Halibut Commission, Fisheries Hall No. 2, University of Washington, Seattle 5, Washington — Chairman, Andrew W. Anderson, Director of Investigations, H. A. Dunlop.

International Pacific Salmon Fisheries Commission, Federal Building, New Westminster, B. C. — Chairman, DeWitt Gilbert; Director of Investigations, Loyd A. Royal.

NATIONAL

United States

Bureau of Commercial Fisheries, U. S. Fish and Wildlife Service, Washington 25, D. C. — Director, Donald L. McKernan; Asst. Director, Andrew W. Anderson.

Pacific Regional Office, 6116 Arcade Building, 1319 2nd Avenue, Seattle, Wash. — Director, Samuel J. Hutchinson; Asst. Director, Donald E. Powell.

Biological Laboratory, 2725 Montlake Blvd., Seattle 2, Wash. — Laboratory Director, Clinton E. Atkinson.

Columbia Fisheries Program Office, 827 N. E. Oregon St., Portland 8, Oregon — Program Director, L. Edward Perry.

Commercial Fisheries Enforcement, 6116 Arcade Bldg., Seattle, Wash. — Regional Fishery Management Agent, Gomer W. Hilsinger.

Exploratory Fishing and Gear Research, 2725 Montlake Blvd., Seattle 2, Wash. — Base Director, Dayton L. Alverson.

Foreign Training Office, 5106 Arcade Bldg., Seattle 1, Wash.—Foreign Trainee Officer, Harvey L. Moore.

Fur Seal Management, 706 Federal Office Bldg., Seattle 4, Wash. — General Manager, Clarence L. Olson.

Loans and Grants Office, 6116 Arcade Bldg., Seattle 1, Wash. — Regional Loan Supervisor, Edwin C. Hinsdale.

Marine Mammel Resources, 706 Federal Office Building, Seattle 4, Wash. — Program Director, Howard Baltzo.

Marine Mammal Biological Laboratory, Sand Point Naval Air Station, Seattle 15, Wash. — Laboratory Director, Ford Wilke.

Marketing Office, 2601 Market Street, Seattle 7, Wash. — Station Chief, Fred W. Hipkins.

Market News Service and Statistical Office, Pier 42, South, Seattle 4, Wash. —Supervisory Market News Report, Charles M. Reardon.

Statistical Office, 342 11th Street, Astoria, Oregon—Fishery Marketing Specialist, Edward E. Poysky.

Technological Laboratory, 2725 Montlake Blvd., Seattle 2, Wash. — Laboratory Director, Maurice E. Stansby.

California Area Office, 101 Seaside Avenue, Terminal Island, California—Area Director, Donald R. Johnson.

Biological Laboratory, P. O. Box 271, Ja Jolla, California — Chief, E. H. Ahlstrom.

Biological Laboratory, Jordan Hall, Stanford University, Stanford, Calif. —Director, O. E. Sette.

Market News Branch, 208 Post Office Building, San Pedro, Calif. — Supervisory Market News Reporter, Victor J. Samson.

Market Development Branch, 101 Seaside Avenue, Terminal Island, California — Fishery Marketing Specialist, Ross Hatton.

Fishery Research Station, 101 Seaside Avenue, Terminal Island, California — C. J. Carlson.

Loans & Grants Office, 101 Seaside Avenue, Terminal Island, California – Lester T. Bradsbury.

Alaska Regional Office, P. O. Box 2481, Juneau, Alaska — Regional Director, Harry L. Rietze; Administrative Officer, Francis W. Stokes.

Auke Bay Biological Laboratory, P. O. Box 1155, Auke Bay, Alaska — Laboratory Director, Dr. George Y. Harry, Jr.

Fishery Products Laboratory, 622 Mission St., Ketchikan, Alaska — Chemist, Jefferson Collins.

Hawaii Area Office, 2570 Dole Street, Honolulu, Hawaii — Vernon E. Brock, Director.

Biological Laboratory, 2750 Dole Street, Honolulu, Hawaii — Laboratory Director, John C. Marr.

Loans and Grants Office, P. O. Box 3830, Honolulu, Hawaii — Robert E. K. D. Lee.

Canada

Canada, Department of Fisheries, Parliament Buildings, Ottawa, Ontario, Canada — Minister, J. Angus MacLean; Deputy Minister, George R. Clark.

Canada, Department of Fisheries, Pacific Area, 1110 West Georgia Street, Vancouver, B. C. — Director, Pacific Area, W. R. Hourston; Asst. Directors, J. C. Stevenson, T. Taylor.

Fisheries Research Board of Canada, Ottawa, Canada — Chairman, Dr. John L. Kask, Ottawa, Biological Station, Nanaimo, B. C.; Dr. A. W. H. Needler, Director, Technological Station, Vancouver, B. C.; Dr. H. L. A. Tarr, Director.

STATE

Pacific Marine Fisheries Commission, 741 State Office Building, 1400 S. W. Fifth Avenue, Portland, Oregon — Chairman, Richard S. Croker; Executive Director, Alphonse Kemmerich.

Province of British Columbia, Dept. of Recreation and Conservation, Commercial Fisheries Branch, Parliament Buildings, Victoria, B. C. — Minister, Hon. Earle C. Westwood.

State of Alaska, Department of Fish and Game, Subport Building, Juneau, Alaska — Commissioner, Clarence L. Anderson; Deputy Commissioner, Clarence F. Pautzke; Chairman, Alaska Board of Fish and Game, Cordova, Alaska, Richard Janson, Jr.

State of California, Department of Fish and Game, 722 Capitol Avenue, Sacramento, California — Director, Walter Shannon; Chief, Marine Resources Branch, Richard S. Croker.

State of Hawaii, Division of Fish and Game, Department of Agriculture and Conservation, 1428 South King St., Honolulu 14, Hawaii — Director, Michio Takata.

State of Oregon, Fish Commission, State Office Bldg., Portland 1, Oregon — Chairman, Herman P. Meierjurgen; Director, Robert W. Schoning.

State of Washington, Department of Fisheries, General Administration Building, Olympia, Washington — Director, Milo Moore.

Pacific Fisheries Organizations

(Data as of January 1, 1961)

GENERAL INDUSTRY

American Seafood Distributors Association, 821 15th Street, N. W., Washington 5, D. C. — Executive Secretary, Elizabeth Guhring.

California Fisheries Council, 1248, East 6th St., Los Angeles 21, Calif. — President, Raymond H. Lemoi; Secretary, Bart A. Ghio.

College of Fisheries, University of Washington, 204 Fisheries Center, Seattle 5, Washington — Dean, Dr. Richard Van Cleve.

Fisheries Association of British Columbia, Room 201, 325 Howe St., Vancouver, B. C. — Chairman, J. M. Buchanan; President, J. Sinclair; Secretary, W. B. M. Wyness.

Fisheries Council of Canada, Room 703, 77 Metcalfe Street, Ottawa 4, Ontario — President, R. E. Matthews, Toronto, Ontario; Manager, C. G. O'Brien.

Fisheries Research Institute, College of Fisheries, Fisheries Hall, No. 2, University of Washington, Seattle 5, Wash. —Director, Dr. William F. Royce.

Monterey Bay Seafood Institute, 320 Washington St., Santa Cruz, Calif. — President, Vince Quartararo; Vice President, Secretary, Ken Sato; Treasurer, K. Nobusada.

National Canners Association, 1133 20 St. N. W., Washington 6, D. C. — President, Milan D. Smith; Executive Secretary, Carlos Campbell; Director, Fishery Products Division, George E. Steele, Jr.

National Canners Association, N.W. Branch, 1600 Jackson St., Seattle, Wash. — Chairman of the Advisory Board, Aubin R. Barthold; Manager, W. V. Yonker; Asst. Manager, Dr. G. Ivor Jones.

National Fisheries Institute, Inc., 1614 Twentieth St., N. W., Washington, D. C. — President, Thomas D. McGinnes, Irvington, Va.; General Manager, Chas. E. Jackson.

Northern California Sea Food Institute, 2677 Larkin St., San Francisco, Calif. — President, Budd Thomas; Secretary-Manager, John Gilchrist.

Oyster Institute of North America, 6 Mayo Avenue, Bay Ridge, Annapolis, Maryland — Director, David Wallace.

Pacific Fishery Biologists, Fisheries Hall No. 2, University of Washington, Seattle, Wash. — President, William H. Hardman, International Pacific Halibut Commission, Seattle; Secretary-Treasurer, Charles E. Walker, Dept. of Fisheries, Vancouver, B. C.

Pacific Fisheries Conference, 1308 Northern Life Tower, Seattle, Wash. — Acting Chairman, Edward W. Allen.

Pacific Fisheries Technologists, 1600 Jackson St., Seattle, Wash. — Maurice Stansby, chairman; Walter V. Yonker, secretary-treasurer.

OPERATORS

Association of Pacific Fisheries, 302 Colman Bldg., Seattle 4, Washington — President, A. R. Barthold; Executive Secretary, Herald A. O'Neill.

California Fish Canners Association, Inc., Ferry Building, Terminal Island, Calif. — President, Gilbert C. Van Camp, Jr.; Executive Director, Charles R. Carry.

Columbia River Salmon and Tuna Packers Association, P. O. Box 60, Astoria, Ore. — Executive Secretary, James H. Cellars.

Conference of Washington State Tuna Packers, 2000 Alaskan Way, Seattle, Wash.—Chairman, R. E. Silver.

Monterey Fish Processors Association, P. O. Drawer 72, Monterey, Calif. — President, David McCafferty; Secretary-Treasurer, Morris Ballo.

Northwest Fisheries Association, 4 Ferry Dock, Seattle 4, Wash. — President, B. E. Gilman; Executive Secretary, Chas. R. Pollock.

Northwest Salmon Canners Association, Colman Building, Seattle 4, Wash. — President, Robert F. Morgan; Secretary-Treasurer, H. A. Daubenspeck.

Olympia Oyster Growers Association, Rt. 1, Box 476, Olympia, Washington.

Pacific Coast Clam Canners Association, 508 Colman Building, Seattle 4, Wash.

Pacific Coast Oyster Growers Association, Room 4, Ferry Dock, Seattle, Wash. — President, Stanley C. Gillies, South Bend, Wash.; Executive Secretary, Charles R. Pollock.

Pacific Herring Packers Association, 1844 Westlake North, Seattle 9, Washington.

Puget Sound Salmon Canners, Inc., Colman Building, Seattle, Wash. — President, John N. Plancich; Executive Secretary, Herald A. O'Neill.

San Francisco Sardine Association, 420 Market Street, San Francisco, Calif. — President, John Costanza; Secretary-Treasurer, George J. Christo.

Seafood Dealers Association, Inc., Foot of 9th Street, Astoria, Oregon — President, Harold Gramson, Secretary, Victor Horgan.

Shrimp Association of the Americas, Walsh Building, 910 East Levee St., Brownsville, Texas — Executive Secretary, J. E. Barr.

Southern California Fisheries Association, 1248 East 6th St., Los Angeles 21, California—President, Ronnie Jack; Secretary, Bart A. Ghio.

Washington State Trout Growers, Rt. 1, Soap Lake, Washington.

West Coast Shrimp Producers Association, 1440 Jackson St., Seattle, Wash. — Chairman, Ivar Wendt; Secretary, Steve Sarich.

Willapa Harbor Oyster Growers Association, Bay Center, Washington — President, Jack Weigerdt; Secretary, Pete Spencer.

VESSEL OWNERS

Alaska Trollers Association, Box 696, Ketchikan, Alaska — President, J. B. Cotant.

Alaska Herring Skippers Association, 1035 Securities Bldg., Seattle, Wash.

Drum Seiners Association, Inc., 125 Hawthorne Road, Bellingham, Wash. — President, Joe Hanson; Secretary-Treasurer, Peter Zuanich.

Fishermen's Wharf Merchants Association, Exposition Fish Grotto, 160 Jefferson St., San Francisco, Calif.

Fishing Vessel Owners Association, Pier 59, Seattle, Washington — President, Capt. Ole Binkvold; Manager, Harold E. Lokken.

Fishing Vessel Owners' Association of British Columbia, 193 E. Hastings St., Vancouver, B. C. — President, George A. Brajcich; Secretary-Manager, Harold A. Christenson.

Grays Harbor Gillnetters Association, 1718 Sumner Ave., Aberdeen, Washington.

Humboldt Fishermen's Marketing Association, Inc., 3019 Albee St., Eureka, Calif.—President, Don Ghera; Secreary-Treasurer, George Korkan.

DIRECTORY

Pacific Fisheries Organizations

(Data as of January 1, 1961)

Ketchikan Vessel Owners Association, 1251 Water Street, Ketchikan, Alaska, Manager, Harold T. Henricksen.

Lower California Fisheries Association, 935 W. Harbor Drive, San Diego 1, Calif. — President, Anthony S. Chiappe; Business Manager, J. J. Camillo.

Prince Rupert Fishing Vessel Owners' Association, 221 1st St., Prince Rupert, B. C. — President, Martin Eriksen; Secretary, M. H. Waters.

Puget Sound Gillnetters Association, Rt. 3, Box 294, Anacortes, Wash. — President, David Milholland.

Purse Seine Vessel Owners Association, 5301 North Ruby St., Tacoma, Wash. — Secretary, Nick Mladinich.

San Diego Commercial Fishing Boat Owners, Inc., 4904 N. Harbor Drive, San Diego, Calif. — President, Nic Cordileone; Secretary-Treasurer, Reg. W. Richardson.

San Francisco Crab Boat Owners Association, 2907 Jones St., San Francisco, Calif. — President, Mario Balestrieri; Secretary-Treasurer, Albert Spadaro.

Tuna Boat Owners Association, Kewalo Basin, Honolulu, Hawaii—President, Oliver Kinney; Vice President, Kazuo Muraoka; Secretary-Treasurer and Manager, William A. Kanakanui.

United Trollers of Alaska, Juneau, Alaska.

Washington Reef Net Owners Association, Lumni Island, Wash. — Executive Secretary, Glenn H. Schuler.

COOPERATIVES

American Tunaboat Association, 1 Tuna Lane, San Diego 1, California — Manager, August Felando.

Angoon Community Association, 715 Hoge Building, Seattle, Wash.

Annette Island Canning Company, P. O. Box 106, Metlakatla, Alaska.

Barrow Cooperative Association, Barrow, Alaska.

Bristol Bay Fish Producers Association, P. O. Box 105, Naknek, Alaska.

California Commercial Fishermen's Association, Inc., 745 S. Seaside, Terminal Island, Calif. — President, John Todd.

Central California Trollers Association — Oakland Branch, 901 — 19th Avenue, Oakland, California; Monterey Bay Branch, 124 Plaza Boulevard, LaSelva Beach, California.

Chignik Boat Owners Association, 1826 Exchange Building, Seattle 4, Wash.

Columbia River Smelt Co-operative Association, Foot of Allen St., Kelso, Wash.

Commercial Fishermen's Inter-Insurance Exchange, 413 West 7th St., San Pedro, Calif. Branch Offices: 613 Security Bldg., Tacoma 2, Wash., 51 Ninth Street, Astoria, Oregon; Post Office Box 434, Eureka, California.

Cook Inlet Set Netters' Association, P. O. Box 916, Anchorage, Alaska.

Copper River Co-operative Company, Inc., 559 Colman Building, Seattle 4, Wash.

Cordova Aquatic Marketing Association, Inc., Box 359, Cordova, Alaska — President, John Goeres.

Crab Boat Owners' Association, 2907 Jones Street, San Francisco, Calif.

Federated Fishermen's Association, Inc., 745 South Seaside Street, Terminal Island, Calif.

Fishermen's Cooperative Association, Inc., Pier 59, Seattle, Wash. — Branches: Neah Bay, and Westport, Wash.; Charleston, Oregon.

Fishermen's Cooperative Association, Fishermen's Wharf, Berth 73, San Pedro, Calif. — President, Joe Califano.

Fishermen's Cooperative Federation, Box 340, Prince Rupert, B. C., and 2195 Commissioner St., Vanvouver 6, B. C. — General Manager, T. H. Sorensen; Secretary, K. F. Harding.

Fishermen's Co-operative Trading Co., Inc., Dillingham, Alaska.

Fishermen's Marketing Association, Inc., P. O. Box 321, Bodega Bay, Calif.

Fishermen's Marketing Association, Inc., 3019 Albee Street, Eureka, Calif. — President, Dick Young; Secretary, W. O. Riley.

Fishermen's Marketing Association of Oregon, Inc., P. O. Box 838, Astoria, Oregon — Secretary, A. H. Wright.

Fishermen's Marketing Association of Washington, Fishermen's Terminal, Seattle 99, Wash. — President, Minor Lervold; Manager, John Wedin.

Five Star Fish and Cold Storage, Inc., 2801 Carleton St., San Diego 6, Calif.

Halibut Producers Cooperative, 15th Avenue, N. W. at Shilshole, Seattle 7, Wash. — President, Roger Bailey; Manager, W. B. Johnson.

Homer Fishermen's Cooperative Association, Homer, Alaska.

Hydaburg Cooperative Association, 96 Columbia St., Seattle 4, Wash.

Keku Canning Company, 96 Columbia St., Seattle 4, Washington.

Kenai Peninsula Fishermen's Cooperative Association, Box E, Cohoe, Alaska.

Klawock Cooperative Association, Klawock, Alaska.

Kodiak Fish Producers Association, Inc., P. O. Box 962, Kodiak, Alaska.

Monterey Fishermen's Association, Monterey, California — Secretary-Treasurer, Ernest Martins.

Monterey Purse Seiners Association, 9 Municipal Wharf, Monterey, Calif. — President, Anthony E. Lucido; Secretary, Joe Cardinale.

Ninilchik Fishermen's Cooperative Association, Clam Gulch, Alaska.

North Pacific Fisheries Association, Inc., P.O. Box 93, Seldovia, Alaska.

Northwest Trawlers Association, Inc., Fishermen's Terminal, Seattle 99, Wash. — President, Dan Luketa; Manager, John Wedin.

Nushagak Independent Fishermen's Association, Inc., Dillingham, Alaska.

Pacific Fishermen, Inc., 5351 24th Avenue, N. W., Seattle 7, Wash.

Petersburg Fishing Vessel Owners Co-operative, Petersburg, Alaska — President, Gordon Jensen; Secretary, Vernon A. Counter, Treasurer, Richard Brennan.

Prince Rupert Fishermen's Cooperative Association, P. O. Box 340, Prince Rupert, B. C. — Secretary and Manager, K. F. Harding.

Purse Seine Vessel Owners Marketing Association, Fishermen's Terminal, Seattle 99, Wash.

Salmon Trollers Marketing Association, Box 137, Fort Bragg, Calif. —President, Elwin Cox.

San Diego Cooperative Fishermen's Association, 410 Harbor Lane, San Diego, Calif.

Smelt Fishermen's Association, P.O. Box 395, Clatskanie, Ore.

Southeastern Alaska Fish Producers Association, Inc., Sitka, Alaska.

DIRECTORY

Pacific Fisheries Organizations

(Data as of January 1, 1961)

Southern California Fishermen's Association, 1140 N. Harbor Drive, Room 9, San Diego 1, Calif.—President, Victor Nigro; Secretary-Treasurer, Louis V. Nigro.

Stikine Gill Netters Association, Wrangell, Alaska.

United Fishermen's Marketing Association, P. O. Box 1035, Kodiak, Alaska.

Wainwright Cooperative Association, Wainwright, Alaska.

Washington Crab Producers, Inc., 109 Dock Street, Westport, Wash.

Western Alaska Cooperative Marketing Association, P. O. Box 95, Dillingham, Alaska.

Yukon River Fisherman Cooperative Association, 115 Beeson Building, P.O. Box 278, Edmonds, Wash.

UNIONS

Alaska Fish Cannery Workers' Union of the Pacific, 217 Fifth Avenue South, Seattle, Wash.—Business Agent, Carolos de los Santos.

Alaska Fishermen's Union, SIUNA, AFL-CIO, P. O. Box 186, Bellingham, Wash.—Agent, Jack Wood.

Alaska Fishermen's Union, SIUNA, AFL-CIO, 49 Clay Street, San Francisco 11, Calif.

Alaska Fishermen's Union, SIUNA, AFL-CIO, 214 Astoria Building, 1418 Commercial, Astoria, Ore.

Alaska Fishermen's Union, SIUNA, AFL-CIO, P. O. Box 1536, Ketchikan, Alaska.

Alaska Fishermen's Union, 84 Union St., Seattle, Wash.—Secretary-Treasurer, George Johansen.

Alaska Marine District Union of Fishermen, Cannery Workers and Allied Trades, SIU; AFL-CIO, Ketchikan, Alaska — Secretary-Treasurer, Merle Adlum, Pier 53, Seattle 4, Wash.

Alaska Native Brotherhood, Grand Camp, Post Office Box 722, Sitka, Alaska—Grand President, Mark Jacobs, Sitka; Grand Secretary, C. E. Peck, Juneau.

Alaska Salmon Purse Seiners Union, Wrangell, Alaska.

Amalgamated Meat Cutters and Butcher Workmen of North America, AFL-CIO. Locals Nos.:

115—3012 16th St., San Francisco 3, Calif.
229—227 E Street, San Diego 1, Calif.
274—846 South Union Avenue, Los Angeles 17, Calif.
445—Box 496, 3910 "E" Street, Eureka, Calif.
516—2123 Adeline Drive, Burlingame, Calif.
551—125 West "E" Street, Wilmington, Calif.
556—220 W. Carrillo Street, Santa Barbara, Calif.
324—507 Willamette St., Eugene, Ore.
649—4862 S. E. 63rd Ave., Portland 6, Ore.
81—2800 First Avenue, Seattle 1, Wash.
158—Post Office Box 9, Bay Center, Wash.
247—203 Medical Building, Bellingham 11, Wash.
494—510 Realty Building, Spokane 4, Wash.

Bering Sea Fishermen's Union, SIU, AFL-CIO, Dillingham, Bristol Bay, Alaska—Secretary-Treasurer, Jim Downey.

Bristol Bay Cannery Workers, Local 46, SIU, AFL-CIO, Dillingham, Bristol Bay, Alaska—Business Agent, Jim Downey.

British Columbia Deep Sea Fishermen's Union, Prince Rupert, B. C.—Secretary, W. H. Brett.

Cannery Workers and Fishermen's Union of San Diego, 640 State St., San Diego 1, Calif.—President, Geo. Ledesma; Secretary-Treasurer, Lester Balinger.

Chinook Cannery Workers' Union, Local 12, Chinook, Wash.—Secretary, Mrs. Lucile Couch.

Columbia River Fishermen's Protective Union, 322 10th St., Astoria, Oregon—Executive Secretary, William Westerholm.

Copper River & Prince William Sound Cannery Workers Union (Independent), P. O. Box 939, Cordova, Alaska—Secretary-Treasurer, Richard Janson, Jr.

Cordova District Fisheries Union (Independent), Box 939, Cordova, Alaska—Executive Secretary, Richard Janson, Jr.

Crab and Codfish Workers' Union, 2505 First Ave., No. 5 Sailors Union Bldg., Seattle, Wash. — Secretary, C. G. Dahlbeck.

Deep Sea Fishermen's Union of the Pacific, 5215 Ballard Ave., Seattle, Wash.—Secretary-Treasurer, Clarence R. Nordahl.

Fish Cannery Workers' Union of the Pacific, Monterey County, 320 Hoffman Ave., Monterey, Calif. — Business Agent, Lester Caveny; Secretary-Treasurer, Roy Humbracht.

Fish Cannery Workers Union of the Pacific, 450 Seaside Ave., Terminal Island, Calif.—President, Andrea U. Gomez.

Fish Plant Workers Union of Newport, SIU, AFL-CIO, P. O. Box 2, Agate Beach, Oregon—Secretary, Lola G. Attridge.

Fisheries Division, International Longshoremen's and Warehousemen's Union (Independent), 150 Golden Gate Avenue, San Francisco, Calif. Northwest Regional Office: 84 Union St., Seattle, Washington.

Local 3—84 Union St., Seattle 1, Wash.—Secretary, Joe Jurich.
Local 30—Box 379, Ketchikan, Alaska.
Local 33—806 South Palos Verdes, San Pedro, Calif. — Secretary, John J. Royal.
Local 41—P.O. Box 873, Juneau, Alaska.
Local 83—Post Office Box 603, Pelican, Alaska.
Local 85—P.O. Box 483, Petersburg, Alaska.
Local 87—P.O. Box 768, Wrangell, Alaska.
Local 37—Alaska Cannery Workers, 213 Main St., Seattle, Wash. — Secretary, Amor Guerzon.

Grays Harbor Cannery Workers Local 553, United Packinghouse Workers Union, AFL-CIO, 110 South F Street, Aberdeen, Washington and Hoquiam, Washington.

Grays Harbor Gillnetters Union, 1718 Sumner Ave., Aberdeen, Wash. —Chairman, Eldon Lapacek; Secretary-Treasurer, Walfred Hendrickson; Board Chairman, Andy Niemi.

Hawaii International Longshoremen's and Warehousemen's Union, Regional Office, 451 Atkinson Drive, Honolulu, Hawaii.

Independent Union of Butchers, Packers and Filleters, 562 Franklin St., Fort Bragg, California.

Puget Sound Cannery Workers' Union, 1405 9th St., Anacortes, Wash. — Secretary-Treasurer, Mrs. Bernice Babarovich.

Seine & Line Fisherman's Union, Monterey County, AFL-CIO, 233 Alvarado St., Monterey, Calif. — Business Agent, John Crivello.

DIRECTORY

Pacific Fisheries Organizations

(Data as of January 1, 1961)

Seafarers' International Union of North America, AFL-CIO (Headquarters), 450 Harrison St., San Francisco, Calif.—Secretary-Treasurer, John Hawk.

Seine & Line Fishermen's Union of San Pedro, SIU, AFL-CIO, 446 West 9th St., San Pedro, Calif.—Secretary-Business Agent, John Calise.

Shoalwater Bay Oyster Workers Union, Local No. 14, SIU, AFL-CIO, Nahcotta, Washington—Secretary, Ott Rutzer.

United Cannery Workers of Kodiak Island, SIU, AFL-CIO, P.O. Box 417, Kodiak, Alaska—President, Harry Lindgren; Secretary-Treasurer, Kimball Poland.

United Fishermen and Allied Workers' Union, 138 E. Cordova St., Vancouver 4, B.C.—President, H. (Steve) Stavenes; Secretary, Homer Stevens; Business Agent, Alex Gordon; Northern Representative, R. L. Gardiner, Metropole Hall, 3rd Ave., Prince Rupert, B. C.

Vancouver Fishermen's Local — Business Agent, M. J. Canic, 138 E. Cordova.
Vancouver Shoreworkers Local—Jack Cook, 1932 W. 6th.
Steveston Fishermen's Local — Jim Ross, Box 308.
Steveston Shoreworkers Local — Ted Foort, 138 E. Cordova.
Victoria Local — F. J. Smele, 1852 Chestnut St.
New Westminster Local—Harold Wilcox, 138 E. Cordova.
Annieville Local—Allan Larsen, 9751 116th St., North Surrey.
Sunbury Local—Hideo Onotera, 8655 River Road, Rt. 1, New Westminster.
Ladner Local—Nick Spilchen, Ladner.
Woodwards Slough Local—Jack Hill, 947 Finn Rd., Rt. 3, Richmond.
Fort Langley Local—E. Burnell, Rt. 5, Langley Prairie.
Albion Local — Tarmo Puska, Websters Corners.
Nanaimo Local—F. W. Meabry, 431 Wharton St., Nanaimo.
Gulf Islands Local — Dave Jenkins, Gabriola Island.
Quathiaski Local—Jack Hewison, Rt. 1, Campbell River.
Pender Harbour Local—W. P. Malcolm, Madeira Park, B. C.
Westview Local—John Chambers, Box 581, Westview.
Namu Local—Steve Pawliuk, Namu.
Skidegate Local—Ed Regnery.
Sointula Local—Bill Mackie, Sointula.
Alert Bay Local—Don Pepper, Alert Bay.
Bella Coola Local—Glen McKay.
Sidney Local—Jack Reid, Swartz Bay Rd., Sidney, B. C.
Gibsons Local—Del Triggs.
Masset Local—Pat Setso.
Bella Bella Local—Al Newman.
Prince Rupert Fishermen's Local—R. L. Gardiner, Metropole Hall, Prince Rupert.
Prince Rupert Shoreworkers' Local—Bob Jones, 1435 Plaza, Prince Rupert.
Port Simpson Local—Donald Sankey, Port Simpson.
Klemtu Local—Percy Starr, Kelemtu.

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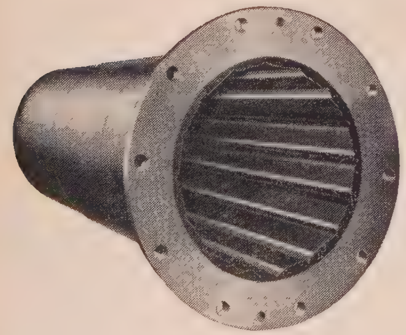

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JAPAN

By KENJI SAKAI

- With expansion of its distant-waters trawl fishing particularly notable, Japan in 1960 maintained its steadily-rising growth in fisheries. Full-year statistical data for all fisheries are not yet in hand at time of writing early in 1961, but those figures for 1960 which are available indicate a gain of 6.6% over the previous year.

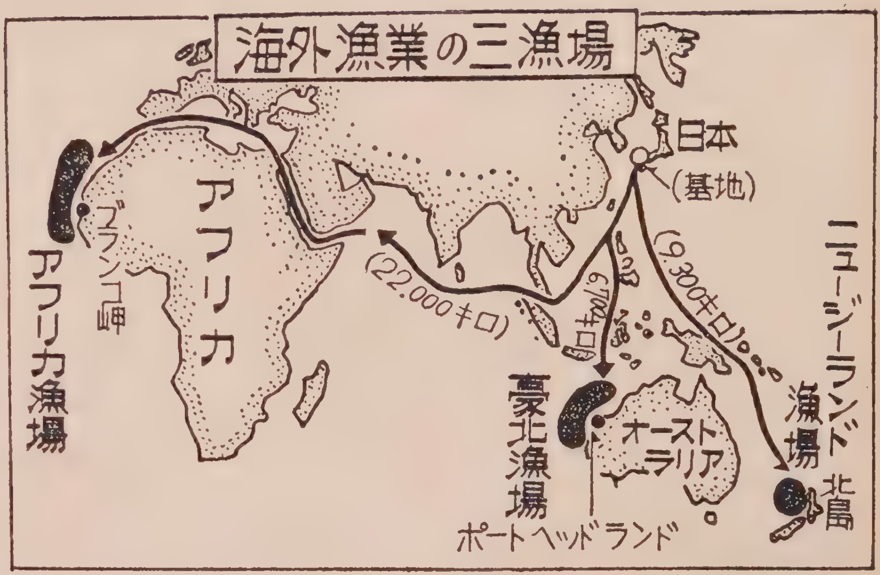
In data for the first half of 1960, Jack mackerel and Pacific mackerel catches both showed marked increase, while herring, sardine, anchovy and Skipjack declined greatly, and Albacore probably did also.

- Trawling, however, stood in the spotlight of Japan's fishery expansion in 1960.

For many years, and indeed until only a few years ago, when trawling was mentioned in Japan it had reference only to activity in the Yellow Sea and East China Sea, for Japanese trawling had been conducted only in these areas, outside Japan's coastal water of course. The size of Japan's otter trawlers used in these traditional fisheries had ranged from 100 to 200 gross tons, with some even smaller.

However, the building of two 1,000-ton vessels, *Aasama Maru* and *Ikoma Maru,* in 1954, and their dispatch to eastern Bering Sea, produced a revolution in Japanese trawling.

MR. SAKAI, author of this report on Japan's fisheries in 1960, is the editorial representative in Japan of **Pacific Fisherman** and others of the **Miller Freeman Publications.** For many years he has reported effectively on the great fisheries of his country through this journal.



Distant Trawling Grounds developed by Japanese companies in 1960 include fishing areas off New Zealand, Australia and northwest Africa. The latter has proven particularly profitable.

Furthermore, restrictions in the traditional trawler operating areas imposed by the Republic of Korea and Communist China, and the depletion of the fish resources of the Yellow Sea and the East China Sea, due to long-continued and intensive fishing by increasing number of ever-larger vessels, produced a trend which led the larger Japanese fishing companies to look for trawl fishing grounds beyond the traditional waters; and to build larger, more capable and better equipped vessels with which to work them.

By dint of extensive investigations, productive fishing grounds in addition to those of east Bering Sea have been found in at least three locations. At the same time building of larger trawlers has become active since 1959. Thus size has advanced from 1,000 tons to 2,250 tons, comparable to the largest trawlers in the world; while numbers of 600-ton trawlers are also being used in fishing these distant waters.

Of the three new trawl fishing grounds developed by the Japanese in 1959 and 1960, one is located in the eastern Indian Ocean off extreme northwestern Australia and directly south of Java. This area was fished in 1960 by four trawlers of Taiyo Gyogyo K.K., with trips averaging about two months.

The second new trawl area, which is called the New Zealand Ground, is located in the western offing of North Island, N. Z. Three Taiyo Gyogyo trawlers worked here in 1960, their trips from Shimoneseki averaging about three months.

The third, and latest, development

1960 Japanese Canned Salmon Pack

(Unit, full case of 48 lbs. Actually, however, there were different kinds of containers, hence the fractions.)

Can Size	Red	Pink	Chum	Silver	King	Tidbit	Pieces	TOTAL
1/2-lb. Flat (8 doz.)	705,056.	296,742.25	28,266.	49,037.5	13,235.	42,745.75	21,324.5	1,156,407.
1/2-lb. Oval (8 doz.)	138.	...	...	...	156.	...	...	294.
1/4-lb. Flat (16 doz.)	106,712.	131,304.25	32.5	40,526.	2,055.	6,694.5	180.5	287,504.75
1-lb. Tall (4 doz.)	14,454.5	48,219.75	...	20.	...	...	...	62,694.25
2-Kilo (1 doz.)	...	2,212.5	...	...	...	...	...	2,212.5
1/2-lb. Flat in Tomato (8 doz.)	...	85.	...	...	...	...	...	85.
1/4-lb. Flat in Tomato (16 doz.)	...	2,948.	...	...	...	...	...	2,948.
TOTAL	826,360.5	481,511.75	28,298.5	89,583.5	15,446.	49,440.25	21,505.	1,512,145.5

NOTE: Data from Japan Export Canned Salmon Manufacturers Association, whose members were: Nichiro Gyogyo K.K., Nippon Suisan K.K., Taiyo Gyogyo K.K., Kyokuyo Hogei K.K., K.K. Hokkaido Gyogyo Kosha, Hakodate Kokai Gyogyo K.K., Hoko Suisan K.K., Hokoku Suisan K.K., operating salmon factoryships. Some of the companies also maintain land equipment to can salmon. The table however includes pack of members of Japan Export Land-Pack Canned Salmon Manufacturers Association, numbering 67 in 1960, and located in Hokkaido and Honshu. These land packers contributed much of the Pink salmon production of 1960.

is in the Atlantic Ocean, the grounds being located in the vicinity of the Canary Islands and off Cabo Blanco on the coast of Africa. In 1960 four trawlers each from Taiyo Gyogyo K.K. and Nippon Suisan K.K., and two from Nanpo Gyogyo K. K. operated in this area. Although four months are required for a trip, the operations are believed to have produced handsome profits because Red Sea Bream (*tai*) are abundant in this area and can be sold at excellent prices in Japan.

(NOTE — Red Sea Bream, *tai* in Japanese, is the fish which was reproduced on the cover of the *Pacific Fisherman Yearbook* for 1960. To the Japanese *tai* is esteemed above all other fish.)

This location off Africa proved so attractive that other companies are planning to follow suit in 1961. Furthermore, Taiyo Gyogyo is planning to dispatch a freezing mothership unit with small trawlers to the southern coast of Africa this year.

Even more notable is the evident contemplation by Japan's high seas fishing companies of the economic possibilities of the Northwest Atlantic bottomfishing grounds off Iceland, Greenland and Newfoundland; and of the possibilities of their great trawlers participating actively in this fishery. There appear to be strong probabilities that this will come to realization in the near future.

Alaska Peninsula Trawling

Back to the Pacific Ocean:

A strip of waters 50 to 250 fathoms deep lying over the continental shelf along the southern coast of the Alaska Peninsula will be fished by two mothership units with their systems of satellite trawler fleets for the first time in 1961. Persistent investigations conducted in 1960 by the Japanese and Russian interests have convinced the companies of the feasibility of such an operation in all respects.

As regards Bering Sea, the year 1960 marked perhaps the maximum development of mothership type trawling operations by the Japanese. In Japan, and even with the Fishery Agency it has generally been the practice to classify a factoryship as to its principal product, rather than the means of fishing used to supply it. Thus the Fishery Agency lists such vassels as "refrigeration factoryship," "fish meal factoryship" and "oil-and-meal factoryship."

In eastern Bering Sea in 1960 Japan had in all nine factoryship units (4 refrigeration, 4 fishmeal, 1 oil-and-meal), with a vast fleet of small trawlers, some of them two-boat types, working intensively. They

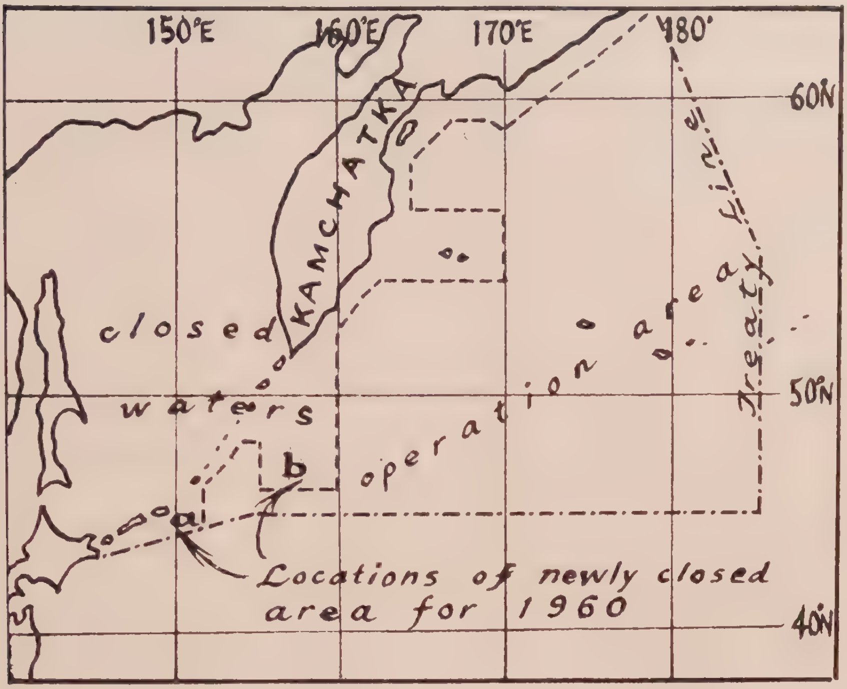
Japanese High Seas Salmon Catch

(By area, in numbers of vessels and number of fish.)

YEAR	Operation Area	Mother-ship	Catcher* Boats	RED	PINK	CHUM	SILVER	KING	TOTAL	AVERAGE Catch per Catcher Boat
1952	Aleutian	3	57	744,929	703,402	644,453	24,446	1,379	2,118,609	37,168
1953	Aleutian	3	105	1,579,850	3,065,336	2,707,134	339,603	8,253	7,700,176	73,350
1954	Aleutian	7	205	3,816,301	5,804,010	9,403,818	1,398,258	74,224	20,496,611	99,983
1955	Aleutian	12	347	12,163,948	16,507,827	18,573,457	3,183,813	74,084	50,503,129	145,542
	Okhotsk	2	60	329,883	9,408,875	3,404,134	392,096	2,398	13,537,396	225,623
	Total	14	407	12,493,831	25,916,702	21,977,591	3,575,909	76,482	64,040,515	157,347
1956	Aleutian	14	447	9,633,546	12,006,578	17,166,916	3,757,456	136,520	42,701,016	95,528
	Okhotsk	2	59	656,404	5,366,361	3,223,943	117,332	994	9,365,034	158,729
	Total	16	506	10,289,950	17,372,939	20,390,859	3,874,788	137,514	52,066,050	102,897
1957	Aleutian	14	405	19,822,540	21,045,585	9,246,132	339,623	31,103	50,484,983	124,654
	Okhotsk	2	56	274,055	6,834,800	2,661,826	102,107	589	9,873,377	176,310
	Total	16	461	20,096,595	27,880,385	11,907,958	441,730	31,672	60,358,360	130,929
1958	Aleutian	15	432	12,025,000	15,546,000	18,786,000	3,393,000	45,000	49,798,000	108,256
	Okhotsk	1	28							
1959	Aleutian	16	460	9,125,000	18,856,000	12,859,000	1,423,000	68,000	42,331,000	92,024
1960	Aleutian	12	410	Quota and catch, all species, 54,000 metric tons.						131.7 tons

NOTE: A small number of "investigation ships" is included in each year up to 1956. The table does not include the salmon catch made on the high seas by Japan home-based gillnet and longline vessels. The catch by operations area was not published by the Fishery Agency for 1958, and the combined totals were in round numbers of fish. Operation in the Okhotsk Sea was discontinued in 1959. Of the total catch of 85,000 metric tons agreed upon for 1959 operations with the Soviet-Japanese fisheries treaty zone, 70,831 metric tons were allocated to the mothership-system gillnet operation and 14,169 metric tons to the home-based vessels. In addition to these vessels, a number of smaller gillnet boats fished Pink salmon in the Japan Sea. Of the total catch of 67,500 metric tons agreed upon for 1960 operations within the Soviet-Japanese fisheries treaty zone, 54,000 tons were allocated to the mothership-system gillnet operation and 13,500 tons to the home-based vessels. In addition to these vessels, a number of smaller gillnet boats fished Pink salmon in the Japan Sea. In 1960, however, fishing of Pink salmon was extremely poor everywhere.

Japan-Soviet 1960 High Seas Operating Area



produced 450,000 tons of flat fish, pollock and other varieties.

One of the refrigeration units received 339,930 King crabs, freezing 180 metric tons of King crab. Except for this vessel, the three other refrigeration factoryships had operated as salmon motherships during that season.

On the western side of Bering Sea, and in the Sea of Okhotsk, there were also so-called "mothership type longline operations," working off the Siberian coast between Cape Oliutorski and Cape Navarin; and a "carrier-type trawling operation" off the west coast of Kamchatka in the areas where floating crab canneries had operated.

Salmon and Crab

- At the fourth meeting of the Soviet-Japanese Fisheries Commission, which persisted for 106 days from Feb. 2 until May 17, 1960, at Moscow, both parties discussed the maintenance and use of resources of salmon, crab and herring, and particularly that of Pink salmon. Many things were agreed upon scientifically, but the final result was the imposition of two new closed areas for 1960 on the Japanese high seas operations. The closures were designed to facilitate passage of Pink salmon into the Okhotsk Sea.

The salmon catch quota for the year was set at 67,500 metric tons from treaty waters, as compared with 85,000 metric tons for the previous year. In the fall of 1959 the Japan Fishery Agency recommended to the industry that it curtail the productive capacity of operating equipment designed for use in 1960, in view of the difficult circumstances in prospect. As result, in the season of 1960 the salmon factoryship operation consisted of 12 units, four less than in 1958 and 1959. There were 410 catcher boats, 50 less than in the two foregoing years.

In the equipment of the factoryships it was noted that nine of them carried fish soluble extraction equipment as a means of making full use of the salmon material handled.

As the salmon season developed, distribution of Red salmon proved exceptionally wide, with this species abundant at the start of fishing all over the North Pacific. As result, both the factoryships and their catcher gillnetters fared better economically than in 1959.

Establishment of the two new closed areas worked a great hardship on the so-called "south-of-48°" or home-based gillnet boats, which were allowed to enter the treaty zone under a closely restricted quota. In 1960 there were 415 gillnet boats and 367 salmon longline fishing vessels engaged in this shore-based operation south of 48° Latitude. They were under strict, intensified supervision by the administrative authorities. However, here also the increased landed price of salmon aided the operators. It also appeared to be demonstrated that some of the larger and more powerful longline vessels could catch substantial quantities of Red salmon in mid-ocean, far from base.

- Although the total Japan pack of canned salmon fell to 1,512,145 cases, due to the reduced number of ocean factoryships, and because it was the off-year for Pink salmon, the unusually high percentage of Red salmon in the treaty waters delighted and surprised the operating companies. However, the many land-based packers felt dissatisfied at the export price of Pink salmon, which was not increased much for the year, despite the fact that in 1960 in particular most of the Japanese Pink salmon pack had been produced by them.

In any case, almost all of the packs were sold soon after the close of the packing season at the prices shown below in comparison with those for

Japanese Factoryship Type Trawling in East Bering Sea

Kind of Factoryship	Year	Factory-ships	Catcher Trawlers	Catch (Metric tons)	PRODUCTS Frozen Fish (Metric tons)	PRODUCTS Fishmeal (Metric tons)	PRODUCTS Fish Oil (Kilolitres)
REFRIGERATION FACTORYSHIP	1958	2	99	18,427	11,887	57	...
	1959	4	18	29,728	21,999	148	...
	1960	4	31	25,682	16,795	...	...
MEAL FACTORYSHIP	1958	1	20	28,406	...	4,676	280
	1959	2	44	128,586	...	19,390	443
	1960	4	107	366,818	...	51,512	1,978
OIL AND MEAL FACTORYSHIP	1960	1	20	50,866	484	6,024	3,367

NOTE: Source, Fishery Agency, which in 1960 classified the kind of factoryship as above by the main product of the ships concerned.

Japanese Canned Crab Pack

(In cases of 48 6-1/2 oz. cans)

YEAR	KING CRAB			OTHER CRABS				TOTAL	No. of Factory-ships	YEAR
	Ocean	Land	Total	Zuwai	Kegani	Hanasaki	Total			
1953	58,240	140,178	198,418	3,966	44,386	5,462	53,814	252,232	1	1953
1954	59,850	85,063	144,913	7,327	286,141	11,520	304,988	449,901	1	1954
1955	206,089	181,557	387,646	4,840	362,270	12,838	379,948	767,594	3	1955
1956	427,350	133,558	560,908	20,000	304,064	25,054	349,118	910,026	6	1956
1957	404,250	98,773	503,023	25,000	258,481	11,933	295,414	798,437	5	1957
1958	379,850	165,915	545,765	45,000	144,263	16,947	206,210	751,975	5	1958
1959	350,000	176,559	526,559	45,000	140,892	12,977	198,869	725,428	5	1959
1960	340,000	150,000	490,000	45,000	200,000	12,000	257,000	747,000	5	1960

1959, all figures on the basis of U. S. $ per case of 96 half-pound tins, f.o.b. Japan:

Variety	1960	1959
Red	42.10	40.80
Silver	32.70	31.40
Pink	20.50	20.00
Chum	18.30	17.30

Although the quantity was far less than originally planned, some Alaska Red salmon was imported in the fall and packed in Japan into about 25,000 cases of 48 quarter-pound cans for export overseas. But it happened that the quality of the samples of the finished product did not satisfy the prospective buyers, and the lot still remained unsold at year-end.

Japanese Canned Salmon Pack

(Unit: Full case of 48 lbs. net)

Year	Red	Pink	Chum	Silver	King	Tidbit	TOTAL
1951	...	...	...	...	. .	. .	195,776
1952	. .	. .	...	. .	...	.	97,700
1953	...	...	...	...	...	. .	208,689
1954	186,146	174,069	80,468	65,658	2,474	4,818	513,633
1955	623,542	675,860	282,890	174,208	3,155	24,097	1,783,752
1956	520,111	781,282	494,943	175,001	7,405	32,907	2,011,649
1957	1,061,307	1,112,608	198,777	11,925	999	38,107	2,423,723
1958	607,048	911,812	357,478	154,585	1,697	52,607	2,085,227
1959	518,805	1,307,912	156,634	99,135	4,042	62,697	2,149,225
1960	826,361	481,512	28,298	89,583	15,446	70,945	1,512,145

NOTE: Segregation by species not available prior to 1954 but the packs were practically all pink. Packing on board factoryship on high seas began in 1953 but in that year only one factoryship had canning equipment with an output of only 38,427 cases including 21,450 cases of Red, although there was a little more pack of this species, etc., in that year from fish frozen in factoryships and brought to land canneries. Since then this practice is continued year after year. In latest years, of the total production about 200,000 cases mainly in Pink, Chum and Tidbit are consumed domestically and all the rest is being exported.

• The 1960 pack of King crab canned by factoryships in the Okhotsk Sea fell slightly from the previous year to a total of 260,000 standard cases, due to the treaty agreement with the Soviet; but the *Tokei Maru*, working in east Bering Sea, was allowed to pack 80,000 cases. The export price of canned King crab was revised to $28.15 f.o.b. per case of fancy "crab halves," 6½ oz.

The year was marked by considerable recovery of the Kegani crab resource of Hokkaido. In contrast, however, the Zuwei crab of the San-in district sold slowly because of the recovery of Kegani, whose quality has been markedly improved of late.

• Factory ship operations for canned King crab in 1960 again occupied five vessels, producing 340,000 cases of 48 cans, 6½-oz. size.

One of the factory ships, *Tokei Maru*, worked in Bering Sea north of the Alaska Peninsula, producing 80,000 cases.

The other four vessels, *Yoko Maru*, *Hakuyo Maru*, *Kaiyo Maru* and *Shiranesan Maru*, all worked in Okhotsk Sea off the west coast of Kamchatka. Each filled its quota of 65,000 cases.

Tuna, Mackerel, Saury

• Late in August, 1960, in view of the market situation in America, the Japan Export Canned Tuna Manufacturers Association took a never-heard-of emergency measure, suspending acceptance of shipments to be made from member packers for open sale to the United States through Tokyo Canned Tuna Sales Co., Ltd. Because of that, only 1,930,000 cases could be sold for open shipment in the year, as against 2,280,000 cases originally set as the year's quota.

In the field of frozen tuna, the decline in the catch which was marked late in 1959 in the Atlantic fishing was reversed as 1960 progressed. This resulted in overloading the European market, as goods were diverted there from the American market for fear of claims. This caused a serious accumulation of landings on the Italian market which was unable to consume the offerings during the period from April to June.

The price fell, finding no bottom.

This experience hit the operators so severely that they pondered and pondered upon counter measures which would prevent a recurrence in the future. As result of their deliberations, they arrived at a plan by which they would undertake to carry home to Japan 10,000 tons of tuna which might be unsuitable for export if the same situation arises in 1961, jointly sharing the transportation charges.

• In Japanese waters the summer Albacore season started brightly early

Aleutian Area Whaling by Japanese

YEAR	Factory-ship	Catcher Boat	WHALES CAUGHT						PRODUCTS (Unit, metric ton)		
			Blue	Fin	Humpback	Sei	Sperm	Total	Meat, Skin	Fin, Whale Oil	Sperm Whale Oil
1952	1	4	55	213	37	14	. .	319	4,054	2,313	...
1953	1	4	90	470	42	98	...	700	7,320	4,951	...
1954	2	10	145	1,316	136	129	490	2 216	15,389	13,847	4,060
1955	2	14	70	1,360	117	21	1,084	2,652	13,269	10,832	8,144
1956	2	15	70	1,415	37	48	1,598	3 168	17,038	12,343	12,579
1957	2	17	70	1,405	.	166	1,700	3,341	19,469	12,305	12,995
1958	2	15	70	1,331	24	330	1,500	3,255	21,593	11,901	12,823
1959	2	15	70	1,450	...	32	1,800	3,352	23,083	12,821	14,417
1960	2	15	70	1,393	...	203	1,800	3,466	27,241	10,725	14,860

in May, causing the fishermen to forget the once widely voiced theory of depletion of the resource. But ill luck visited them soon. Disturbances resulting from the Chilean tidal wave in May liberated the live bait impounded at base ports. Then a small typhoon that came unusually early in June swept over the Albacore fishing area, disturbing normal sea conditions and dispersing the Albacore.

To make matters worse, the early typhoon also dispersed the Skipjack, and landings of this species were so light that the beach price of Skipjack stood higher than that of Albacore throughout the year.

Japanese Fisheries Directory

● Japanese fishery agencies and associations, their addresses and principal officers as of January 1, 1961, were:

General

Fishery Agency, Ministry of Agriculture and Forestry, Kasumigaseki, Chiyoda-ku, Tokyo—Minister, Hideo Suto; Director, Kenjiro Nishamura.

Japan Fishery Society, Sankaido, Akasaka Tameike, Minato-ku, Tokyo—President, Tatsunosuke Takasaki.

Vessel Owners

Federation of Japan Tuna and Bonito Fisheries Cooperative Associations, Tuna Building, 2-7 Hirakawa-cho, Chiyoda-ku, Tokyo — President, Bunpei Hamaji.

Operators

Japan Canners Association, 567 Marunouchi Building, Marunouchi, Chiyoda-ku, Tokyo—President, Tomohachi Ueta.

Japan Canned Food Exporters Association, Naigai Building, Marunouchi, Chiyoda-ku, Tokyo—Director-in-Chief, Takeshi Aizawa.

Japan Frozen Food Exporters Association, Kohan Building, 3-3 Kasumigaseki, Minato-ku, Tokyo — Director-in-Chief, Kenkichi Nakabe.

Japan Export Frozen Tuna Manufacturers Association, Tuna Building, 2-7 Hirakawa-cho, Chiyoda-ku, Tokyo—Director-in-Chief, Kenkichi Nakabe.

Japan Export Canned Tuna Manufacturers Association, Kokubu Building, 1-2 Nihonbashi-dori, Chuo-ku, Tokyo — Director-in-Chief, Tomohachi Ueta.

Japan Export Canned Salmon Manufacturers Association, 2-4 Ote-machi, Chiyoda-ku, Tokyo — Director-in-Chief, Koichiro Kobayashi.

Japan Export Land-pack Canned Salmon Manufacturers Association, Kanyu Kaikan, 7-25 Ironai-cho, Otaru, Hokkaido—Director-in-Chief, Katsusaburo Usui.

Japan Export Canned Saury Manufacturers Association, Naigui Building, Marunouchi, Chiyoda-ku, Tokyo — Director-in-Chief, Wasaburo Nemoto.

● In contrast to tuna, production and export of canned Jack mackerel was greatly expanded, so that at the end of 1960 the Japan Export Canned Jack Mackerel Manufacturers Association was born.

Production of canned sardines made a nice start in the spring of 1960, and after the summer recess regained vigorous activity as winter neared.

The year 1960 produced a total failure of saury fishing. This usually begins in the summer. Because of the shortage of the new pack a crisis developed because of inability to supply the canned saury required under a reparations program with Burma.

Damage caused by the tidal wave from Chile reduced the pack of canned oysters.

There were frequent claims in 1960 in regard to the quality of the canned short-neck clam exported to Canada, resulting in the employment of more exacting inspection standards.

Diversification

● A trend toward diversification was notable in the business of Japan's great fishing companies in 1960.

In the spring Nichiro Gyogyo K.K., the greatest salmon packer, completed building what is generally hailed as the world's finest oyster plant at Hiroshima. This was accomplished with the technical advice and distributional cooperation of the Coast Oyster Co., largest oyster concern on the Pacific Coast of the United States, as well as of British Columbia Packers, Ltd., and Van Camp Sea Food Co., principals in the Coast company. The plant was built and all its supply operations controlled to meet the world's most exacting specifications for quality and sanitation.

To the end of 1960 no other of the great companies gave evidence of entering the oyster field as competition, but mink culture proved attractive to several companies with access to large quantities of fish material desirable for the feeding of fur-bearers.

In 1960 Nippon Suisan completed a huge cold storage at Tokyo Port, a feature of which is the inclusion within the building of a modern multi-use food processing plant.

Nichiro is also reported as installing a giant baking machine from America; and Taiyo Gyogyo intends to increase its sales of broilers to 4.5 million in 1961 from the 1 million marketed in 1960.

Thus instances of purchase of agricultural land by fishing companies in many prefectures have become so frequent that the "invasion of the fisheries into agriculture" had become a national topic of critics at 1960 year-end.

● Although there was a great deal of construction of new fishing vessels in 1960, as well as remodeling and the importation of an entire whaling fleet, the most noteworthy 1960 additions to the Japanese fishing fleet were *Soyo*

Japanese Mid-Pacific Mothership Tuna Operations

YEAR	Factory-ship	Catcher Boat	CATCHES (Unit, metric tons)						
			Yellowfin	Albacore	Bigeye	Bluefin	Skipjack	Others	TOTAL
1950	3	44	4,140	49	581	1	12	2,416	7,199
1951	6	88	5,473	138	2,702	2	19	4,069	12,403
1952	2	38	4,468	79	598	7	30	2,067	7,249
1953	2	37	4,830	323	831	7	12	3,031	9,034
1954	6	122	4,317	3,950	1,332	687	16	5,387	15,689
1955	3	103	2,921	4,705	767	6	28	4,933	13,361
1956	3	94	2,021	3,689	1,495	5	14	3,954	11,180
1957	3	96	5,153	3,125	1,854	5	42	3,923	14,105
1958	3	88	4,656	4,096	1,910	4	41	3,674	14,384
1959	4	162	2,920	5,554	1,364	6,595	77	4,178	20,688
1960	5	220	---	---	---	---	--	---	24,000*

NOTE: Source, Ministry of Agriculture and Forestry, Statistics and Survey Division. "Others" include Broad-bill swordfish, Black marlin, White marlin, Striped marlin, Sailfish, Sharks, etc. *Estimated. For years prior to 1955 data are in tons of 2,000 lbs.

Japanese Foreign-Based Tuna Operations

(By foreign bases, trips landed, catch by species, in metric tons.)

YEAR	SAMOA-BASED							NEW HEBRIDES-BASED							TOTAL
	Trips	Yellowfin	Albacore	Bigeye	Marlin	Other	Total	Trips	Yellowfin	Albacore	Bigeye	Marlin	Other	Total	
1955	194	2,917	3,253	609	1,075	195	8,049	---	---	---	---	---	---	---	8,049
1956	244	1,958	3,428	544	1,098	65	7,094	---	---	---	---	---	---	---	7,094
1957	255	1,523	5,534	499	1,079	29	8,666	5	28	91	1	22	7	150	8,816
1958	269	1,966	8,171	432	946	23	11,540	155	1,020	2,592	135	456	104	4,309	15,849
1959	272	1,530	9,370	407	709	36	12,054	106	593	2,615	191	422	65	3,889	15,943
1960	270	---	---	---	---	---	12,000*	105	---	---	---	---	---	---	16,000*

*Estimated. Data from Ministry of Agriculture and Forestry, Statistics and Survey Division.

Maru, 11,192 gross tons, and *Amagi Maru*, 2,250 gross tons.

The former is a new fish meal factoryship built by Hokuyo Suisan K.K. for Bering Sea use; and the latter is Nippon Suisan K.K.'s stern trawler for service in the Atlantic.

In construction the shift from wood to steel in medium and small trawlers was particularly noted, as was the general employment of super-chargers on the main engines of fishing vessels.

- In Japan 1960 was the 10th year since the introduction of synthetic fiber in the manufacture of fishing nets. During the decade development of synthetic fibers, and of methods for their utilization in making fishing nets, has been so swift that in Japan today 90% of all fishing nets are said to be made of one synthetic or another.

Due to the difficulty in changing equipment, the shift from natural fiber to the synthetics in rope manufacture has never been as marked as in nets; but in 1960 there was definite movement among cordage manufacturers to manufacture ropes of synthetic fibers in commercial tie-ups with the large trading firms.

Export of fishing nets and synthetic ropes has increased enormously; with shipments going to as many as 100 countries.

- Finally, the Japanese—and particularly those associated with the fisheries—will always recall 1960 as the year which ended almost a decade of hardship and humiliation stemming from the detainment in Korea of large numbers of Japanese fishermen whose vessels had been seized by the Rhee R.O.K. government on charges of violating its proclaimed fishery regulations or areas.

After the downfall of the Rhee Government in Korea all detained Japanese fishermen were promptly repatriated and international discussions of fishery matters were resumed between Japan and Korea in a friendly atmosphere.

Japanese Export of Fishing Net and Rope, 1955-59

(Unit: 1,000 Kilo or 1 metric ton)

Year	Nylon (1)	Vinylon (2)	Polyvinylidene (3)	Polyvinylchloride (4)	Polyesters (5)	Blended Fibres	Total Synthetic Fibre	Natural Fibre	TOTAL
1955	120	35	0	..	..	19	175	2,499	2,674
1956	310	95	28	1	..	74	511	2,736	3,247
1957	669	195	1	11	..	263	1,142	2,919	4,062
1958	859	289	43	89	0	579	1,862	2,361	4,223
1959	1,531	621	16	84	3	655	2,914	2,209	5,124

NOTE: Source, Japan Fishing Net Inspection Corporation. Fractions being discarded, 0 means less than unit quantity and ... means none. In actual trade such names as Amilan for (1), Manryo for (2), Saran and Kurehalon for (3), Mewlon and Teviron for (4) and Dacron for (5) are generally used.

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IMPORTS

- Imports of fishery products continue to supply an increasingly significant portion of United States requirements. Equally, the United States as a market continues to increase in importance to the world's fishery producers.

Over the past decade the value of fishery products imported into the United States increased 85%. The gain in the last previous year for which statistics are available was 12% over the year before.

In the last full year for which import data are complete the value of imported food products of fishery origin entering the United States was $311,033,000, and the industrial products derived from marine fish, animal and shellfish sources was $55,467,000.

Degree to which the United States market is dependant upon imports is indicated by the fact that of the United States consumption of fish fillets and blocks, 67% were imported. Frozen tuna used in the United States was half imported. Foreign sources supplied 42% of the shrimp consumption of the United States, an equal amount of true lobster supply and 89% of the spiny lobster utilized in the American market. In canned crab meat imports accounted for 71% of the supply.

In the field of industrial products fish meal was the most important import, with 28% of the consumption coming from foreign sources.

Of the fish products imported into the United States, 63% are derived from three countries, Canada, Japan, and Mexico, listed in order of their importance in import values.

Other ranking countries are Norway, Peru, South Africa, Ireland, Denmark, and Australia.

- Value of fishery imports from Canada during the last full year for which data are available reached the total of $101,967,000, with lobsters as the leading item, followed closely by ground fish fillets.

Japan, with a steadily rising volume of imports topped $96,000,000, with frozen tuna as the most significant item, followed by tuna canned in brine, cultivated pearls and canned salmon, in that order.

Mexico shipped to the United States shrimp to the value of $27,794,000, out of total imports from that country of $32,869,000.

It is significant that fresh or frozen shrimp was the leading item in point of value among all fishery imports, with a total value of $52,306,000, slightly more than half of it from Mexico.

Tuna, when the frozen and canned items are taken together, reached a total of $51,416,000, of which $21,688,000 was the canned product. This represented a 50% increase in a period of four years.

- Substantial increase in imports of canned tuna into the United States were registered during the first three-quarters of 1960, a period which saw frozen tuna imports holding at approximately the level of the same period in 1959. Thus the total supply of tuna from imported sources increased materially.

Canned salmon imports declined sharply in this period in contrast with the experience of 1959, due undoubtedly to the reduced quantities available for export from Japan and the lower production of the British Columbia salmon fisheries of 1960.

Detailed data on imports in this period showed:

Groundfish and ocean perch fillets and blocks: The most significant trend in groundfish imports during

U. S. IMPORTS OF FISHERY PRODUCTS

1956-1959, stated in thousands of dollars

COUNTRY	1956	1957	1958	1959
Canada	95,483	97,404	107,005	101,967
Japan	70,800	77,202	84,872	96,226
Mexico	27,815	25,248	28,005	32,869
Norway	13,620	11,144	12,087	16,405
Peru	7,320	9,167	10,907	16,374
South Africa	8,039	8,554	9,332	12,090
Iceland	6,200	6,022	8,775	10,000
Denmark	2,887	3,463	5,728	8,239
Australia	6,609	7,766	7,665	8,180
Panama	4,269	6,291	5,852	6,458
Portugal	4,907	5,507	5,177	5,452
Cuba	8,158	6,282	5,542	4,810
Ecuador	2,308	3,075	3,510	4,159
Angola	742	1,046	2,065	3,023
Brazil	2,976	2,337	2,359	3,002
Netherlands	928	2,496	1,509	2,628
United Kingdom	2,033	1,540	1,787	2,388
India	1,328	1,407	1,547	2,239
France	2,273	1,139	1,169	2,230
Chile	1,673	1,130	2,007	1,282
Other	10,829	19,223	20,271	26,479
TOTAL	281,197	297,443	327,171	366,500

NOTE: Value at the foreign port of shipment.

SOURCE: Bureau of Commercial Fisheries; from Bureau of Census data.

the first nine months of 1960 was the larger share of total imports provided by frozen blocks. During the 1960 period, frozen blocks were 56% of all fresh or frozen groundfish imports compared with 39% in the similar period in 1959. Despite the increased imports of blocks, groundfish imports were down 8% owing to a sharp decline in fillet imports, especially cod.

Imports from Canada

(Figures for 1959, latest full year available)

Fresh or Frozen	
Lobster	$ 13,802,000
Groundfish Fillets	13,191,000
Freshwater Fishes	11,220,000
Salmon	7,212,000
Freshwater Fish Fillets	6,052,000
Halibut	5,714,000
Flounder Fillets	4,176,000
Fish Blocks	3,850,000
Canned Lobster	4,099,000
Fishmeal and Scrap	4,776,000
Other Fishery Products	21,736,000
TOTAL	$101,967,000

Tuna, fresh and frozen: During January-September, 1960, frozen tuna was imported in the same quantity as during the comparable period of 1959. Imports of Albacore, however, were 50% greater; Yellowfin and other tuna were down 11%. Although other countries are supplying increased quantities of frozen tuna to the United States, Japan still accounts for the major share.

Tuna, canned in brine: During January-September, 1960, imports of canned tuna in brine were slightly higher than those of the like period of 1959. A decline in receipts of canned light-meat tuna was more than offset by an increase in receipts of canned white-meat tuna.

Shrimp, mostly frozen: Shrimp imports in the first nine months of 1960 were slightly higher than those in 1959, a year of record imports. Receipts from Mexico and El Salvador were up more than three million pounds; receipts from Japan were 3,690,000 pounds less than those of the like period of 1959.

Lobster and spiny lobster, fresh or frozen: The quantity of northern lobsters imported during January-September 1960 was 7% above that of the same period in 1959; the quantity of spiny lobster was up 16%. The major supplier of US lobster imports were Canada, Australia, and the Union of South Africa.

Salmon, canned and fresh or frozen: Salmon imports were considerably below those of January-September 1959. Imports of canned salmon, primarily from Japan, were 42% less; imports of fresh or frozen salmon, nearly all from Canada, were down 30%.

Canned sardines: Norway and Portugal, as usual, supplied the major share of the imported canned sardines in oil; the Union of South Africa provided the major share of the canned sardines not in oil. Receipts of canned sardines not in oil were more than five times those imported during all of 1959 when these imports were comparatively low.

Cannned crabmeat and canned oysters: During the first nine months of 1960, imports of canned oysters were up 13% over those of the like period of 1959; imports of canned crabmeat were down 50%. Among reasons reported for the declining imports of Japanese crabmeat were more profitable markets elsewhere and added restrictions on Japanese crab fishing in the Sea of Okhotsk area.

Sea scallops, fresh or frozen: During January-September, 1960, imports of sea scallops from Canada were more than double those of the same period of 1959. Canada accounted for 93% of the 1960 imports; Japan supplied nearly all the remainder.

Swordfish, fresh and frozen: Imports of frozen swordfish rose 3%; imports of fresh swordfish declined 44% from those of the first nine months of 1959. Japan accounted for the major share of the frozen swordfish and Canada for nearly all the fresh swordfish.

Fishmeal: During January-September, 1960, imports of fishmeal were down 19% from those of the like period of 1959. *Peru accounted for more than half of the nine-month receipts.* Canada was second leading supplier. A large gain in imports was noted in receipts from Chile; a sharp decline from Angola.

Imports from Japan

(Figures for 1959, latest full year available.)

Fresh or Frozen	
Albacore Tuna	$ 7,787,000
Other Tuna	12,642,000
Shrimp	5,051,000
Swordfish Fillets	4,323,000
Canned	
Light-meat Tuna in Brine	13,254,000
White-meat Tuna in Brine	4,567,000
Salmon	10,778,000
Crabmeat	7,908,000
Pears, Cultivated	12,875,000
Other	17,041,000
TOTAL	$96,226,000

Fish solubles: Imports were 87% below those of January-September, 1959. This decline is attributed to low prices for fish solubles in the U.S. market.

1960-FISHERY PRODUCTS IMPORTED FROM MEXICO-

(ENTERED THROUGH CALIFORNIA AND ARIZONA)

SPECIES	Pounds												
	Nov. '59	Dec. '59	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	TOTAL
FISH:													
Cabrilla	1,723	...	...	339	15,151	1,874	7,375	19,368	95,676	32,848	7,660	...	182,014
Corbina, fresh & frozen	12,311	20,958	36,056	34,572	97,590	39,242	21,287	3,278	1,628	6,609	6,570	880	280,981
Sea Bass, white & black	...	...	...	...	...	...	...	12,077	...	16,000	2,207	...	30,284
Tortuava, fresh & frozen	887	156,197	130,977	495,748	129,136	3,601	4,737	89,200	36,095	17,814	51,446	...	1,115,838
Unclassified, fr. & frzn	11,871	27,264	6,685	17,560	27,188	26,484	32,898	104,842	16,935	25,475	13,976	8,518	319,696
Tuna	246,326	395,297	...	138,380	474,469	841,351	455,383	347,732	...	511,434	836,569	632,402	4,879,343
TOTAL FISH	273,118	599,716	173,718	686,599	743,534	912,552	521,680	576,497	150,334	610,180	918,428	641,800	6,808,156
SHELLFISH:													
Abalone: Fresh	...	530	...	...	...	...	...	...	...	...	...	...	530
Frozen	15,925	41,015	9,690	...	2,405	13,880	28,427	46,765	20,120	1,500	3,410	14,180	197,317
Canned	384,240	480,000	399,600	390,832	378,000	345,696	442,320	763,240	457,280	406,880	370,646	595,164	5,413,898
Dried	3,323	3,705	2,752	1,981	5,784	3,523	3,302	...	11,779	3,412	550	...	40,111
Fresh and Frozen:													
Clams & Clammeat	...	...	...	...	2,000	...	7,181	17,296	54,148	29,195	...	18,823	128,643
Shrimp	5,394,556	5,581,995	3,432,149	2,776,422	3,319,392	3,310,076	3,343,363	3,960,883	2,396,623	231,880	2,764,620	7,227,861	43,739,820
Spiny Lobsters	167,709	273,325	147,017	132,586	117,008	4,067	...	...	...	...	...	123,239	964,951
Shrimp, Canned	...	...	...	...	...	...	...	61,111	...	...	...	39,608	100,719
Unclass. Shellfish	...	...	11,112	...	4,110	...	220	...	...	...	...	...	15,442
TOTAL SHELLFISH	5,965,753	6,380,570	4,002,320	3,301,821	3,828,699	3,677,242	3,824,813	4,849,295	2,939,950	672,867	3,139,226	8,018,875	50,601,431
OTHER FISHERY PRODUCTS:													
Livers	6,240	9,454	7,716	12,912	40,606	26,387	29,304	26,818	17,925	5,579	3,887	...	186,828
Miscellaneous	...	86,866	27,000	65,480	...	15,011	19,535	9,544	19,940	10,339	...	2,890	256,605
Meal	...	12,500	23,000	...	29,700	...	...	...	...	88,000	...	...	153,200
Shark Fins	3,703	16,275	15,769	6,354	7,149	10,797	22,518	27,979	18,226	22,922	12,466	9,120	173,278
TOTAL PRODUCTS	9,943	125,095	73,485	84,746	77,455	52,195	71,357	64,341	56,091	126,840	16,353	12,010	769,911

United States Exports

• In spite of the extremely short production of salmon of the varieties usually exported from the United States frozen, the trade in the product during the first nine months of 1960 showed significant gains over the January-September period of 1959.

Canned mackerel and frozen shrimp, as well as fish oil, also increased in the export trade. Canned sardines, canned salmon and canned squid exports declined.

Details of the export trade in fish products from the United States in the first three-quarters of 1960 follow:

Salmon, canned and fresh or frozen: Exports of fresh or frozen salmon were nearly three times those of the first nine months of 1959. The increase may be attributed to larger landings of Alaskan salmon and liberalization of import controls by a numbert of foreign countries. Exports of canned salmon declined 26% mainly due to a reduction in the amount of canned salmon taken by the Philippines. The large shipment of canned salmon reported taken in 1959 was a departure from the usual United States-Philippine trade in this product during recent years.

Shrimp, fresh or frozen and canned: During the first nine months of 1960, exports of fresh or frozen shrimp were up 40%; exports of canned shrimp showed a 27% increase. Canada took more than half the canned shrimp and nearly three-fourths of the fresh or frozen shrimp.

Canned sardines, not in oil: Exports declined 47% from the comparable period of 1959. This decrease is principally the result of the drop of more than 50% in shipments to the Philippines. Notwithstanding the recent cutbacks, that country is still the primary export market for United States canned sardines.

Canned squid: During January-September, 1960, exports of canned squid were behind those of the similar period in 1959. The decline is traceable to restrictions imposed by the Philippines which the main foreign market for US canned squid. After a record high level in the first quarter, canned squid exports to the Philippines decreased in the second quarter; none were reported in the third quarter.

Fish oils: Exports were 4% above those of the first nine months of 1959. Quantities exported to Sweden and Norway, in addition to that shipped to the Netherlands and West Germany, are contributing to the increase in quantity over the record year of 1959.

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MARKETS

- Marketing canned salmon in the United States in 1960 consisted essentially of the baffling task of trying to stretch an inadequate supply over a vigorous demand — a good deal like trying to cram a growing pre-school boy into last year's snow suit.

High prices might have been expected to have a sedative effect in the active demand — and they were applied — but the tranquilizing fell far short of what the doctor had anticipated.

All-in-all canned salmon sellers did not have an unpleasant season, providing they had salmon to sell. Thus the packers' own sales departments in most cases managed handily, their principal problem being how to convince the long-established outlet that its allocation was an honest split of the available supply.

The canned salmon *distributor* had a real problem. He was concerned more with getting salmon to sell than he was with selling it.

Prices held, and even moved up, through the year; and 1960 new pack arrived in warehouses which looked like Old Mother Hubbard's cupboard.

- Running back over our notes:

Pre-Lenten salmon trade was marked by stability. Japan found about 50,000 cases of Reds which had been overlooked in earlier sold-out reports; but the United Kingdom snapped them up as a Dolly Varden gulps a fingerling.

By mid-spring Red talls had moved into "acute scarcity" category; and Pink talls were about the only item in anything like normal supply; priced at $24, which was to look like a bargain six months later. Japanese Pink halves were available, and they were able to keep coming through April whenever there was a call for them.

We've already mentioned the barenness of supply which prevailed as the new pack-year opened.

- Those salmon men who had faith in science expected a good Red year on Bristol Bay in 1960. Those of greatest faith outfitted in a manner which their bankers felt put prudence under a good deal of a strain.

No one, no matter how great his faith, was in position to take full advantage of the Bonanza which came in the last days of June and ran through the first 10 days of July.

It was one of the big runs of history, certainly greater than any since 1938—but inadequate outfitting en-

AMERICAN CANNED FISH VALUES BY AREAS

YEAR	PACIFIC COAST						States Other than Pacific TOTAL	United States TOTAL
	Alaska	California	Oregon	Washington	TOTAL	% of Nat'l. Total		
1935	$26,072,966	$25,252,965	$ 2,851,987	$ 4,955,117	$ 59,133,035	78.8	$15,860,684	$ 74,993,719
1936	45,078,945	26,296,129	2,972,959	3,582,880	77,930,913	82.3	16,726,956	94,657,869
1937	45,041,499	30,741,773	4,163,681	5,276,928	85,223,881	81.2	19,713,750	104,937,631
1938	37,059,151	25,232,688	3,638,815	3,762,575	69,693,229	83.5	13,752,660	83,445,889
1939	34,775,988	31,639,354	4,622,664	5,192,077	76,230,083	79.0	20,228,510	96,458,593
1940	31,836,480	36,949,395	5,294,488	3,987,170	78,067,533	82.9	16,046,513	94,114,046
1941	56,453,007	39,830,950	7,704,434	7,130,960	111,119,351	80.1	27,564,806	138,684,157
1942	48,874,227	44,506,354	12,375,323	8,319,559	114,075,463	78.8	30,567,784	144,643,247
1943	58,479,130	46,842,918	7,242,950	2,975,728	115,540,726	81.8	25,615,584	141,156,310
1944	52,072,335	53,653,337	11,720,608	3,706,586	121,152,866	79.5	31,158,318	152,311,184
1945	45,491,662	60,219,179	12,543,519	7,326,616	125,580,976	82.0	27,219,595	152,800,571
1946	55,081,941	85,457,037	12,164,093	18,202,350	170,905,421	75.1	56,724,033	227,629,454
1947	89,135,362	116,493,682	20,626,850	24,949,347	251,205,241	80.9	59,475,179	310,680,420
1948	97,657,187	137,876,592	21,926,969	18,497,700	275,958,448	82.1	60,223,031	336,181,479
1949	82,225,067	119,497,465	13,683,517	23,009,231	238,415,280	80.6	57,088,625	295,503,905
1950	82,828,503	140,251,694	19,250,557	25,370,759	267,701,513	81.3	62,661,340	330,362,853
1951	80,748,052	122,572,382	15,454,209	27,312,377	246,087,020	81.7	55,123,275	301,210,295
1952	77,586,903	124,582,452*	14,284,187	21,362,466	237,816,008	77.7	68,013,190	305,829,198
1953	59,477,956	132,298,470	15,629,708	24,357,778	234,363,912*	76.5	72,515,896	306,873,674
1954	65,107,077	145,247,976	18,386,407**	32,524,805	261,266,265	78.9	69,760,245	331,026,510
1955	58,289,037	133,649,363	22,450,859***	25,671,266	240,060,525	79.1	63,514,935	303,575,460
1956	78,758,792	143,145,330	30,200,880§	18,452,364	270,557,366	77.8	77,009,097	347,566,463
1957	64,634,485	136,612,240	29,964,077§	27,576,185	258,786,987	77.3	75,979,085	334,766,072
1958	67,453,542	162,962,108	38,659,049§	31,577,105	300,651,804	77.5	87,214,236	387,866,040
1959	53,428,114	145,427,578	16,870,901	28,034,236	243,760,829	70.0	104,515,211	348,276,040

*Includes Hawaii. **Includes Hawaii and Samoa. ***Includes Samoa, Hawaii, Puerto Rico.
§Includes Samoa, Hawaii, Puerto Rico and a minor quantity canned in Maryland.

abled the industry only to utilize about one-third of the run. There were various factors which brought about the limited preparation of course: disagreement among the various investigators as to prospects; strictness of the Alaska regulations in advance of demonstrated abundance; unwillingness of bankers to finance full preparations in the face of expert disagreement and administrative restraint.

The pack was good, but might have been 50% larger. The fish were exceedingly small in size, and this forced costs up. Where Bristol Bay Reds usually run about 13 to the case, those of 1960 averaged above 15.

Quality was fully up to standard.

● The abundant pack of Bristol Bay Reds came to be added to a very fair pack on the Peninsula, Cook Inlet and Puget Sound; sharply below normal on Copper River. British Columbia Sockeye production was acutely disappointing.

Scarcity of Pinks — scarce to the point of failure in Southeast Alaska and Northern British Columbia — served to support pricing of Reds, which held to 1959 levels, despite the new abundance.

This condition held to the end of 1960. Pinks moved up gradually to as high as $28, quotations at $26 at year-end being theoretical or applying only to earlier commitments.

Reds proved to have a price-resistant popularity which surprised everyone. Trading in Red talls, even at a $35 price reflected the apparent willingness of the consumer to pay a high price for good salmon. How much of this willingness was due to Red salmon popularity, how much to the Canned Salmon Institute's product promotion campaign, and how much to a consumer preference for Reds over Pinks when the latter cost as much as they do today, were questions puzzling the salmon pricers and sellers at end of 1960.

● Enigma of the year was the deal by which a Japanese canning company bought a quantity of brine-frozen Reds in Seattle and shipped them to Japan for canning in quarters and eventual sales to Britain.

While permits for 3,500 tons of such fish were issued by Japan, it is doubtful if more than 300 tons ever were shipped. These fish are believed to have been bought for 54¢ per lb., Seattle, a fish price at which the sharpest pencils in the business think it would have been impossible to recover cost by selling to Britain.

Why did they do it? This was another unanswered question of 1960.

Two opinions are advanced among those in best position to understand:

1. That the deal was essentially political, planned to embarrass Americans with a charge that they had caught more than they needed and that Japan had to take the surplus off their hands.

2. That the buyer went through with an unprofitable deal in order to protect priority to such permits under more favorable auspices at another time. This theory presumes that failure to exercise a requested permit closes the door to any subsequent grant when conditions may be more favorable for profitable exercise of the privilege.

● From the clinical point of view — as apart from those of merchandising and of profit and loss—canned salmon marketing in 1960 was of particular interest on two counts:

1. As a demonstration of the degree to which Red salmon in fully adequate supply, and at the all-time high price, will substitute in the consumer's selec-

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tion for Pink salmon whose scarcity is reflected in prices at a level often in the past associated with Red salmon.

2. As a test of the price/volume effect on the American markets of reduction in imports of canned salmon far below the average of recent years, but in a year of moderate domestic supply.

- Among the noteworthy trends manifest in Pacific salmon canning and canned salmon marketing in 1960 was the unusual degree of interest manifest in Sockeye and Red salmon quarters.

This was particularly true in British Columbia and on Puget Sound, where the relatively limited amount of Sockeye available to the industry permitted operation at the pace imposed by packing quarters.

Long a goal for inventors, machine packing of quarters became an accomplished fact in 1960; and there is reason to believe that at least one, and perhaps two, other packing machines eventually will be introduced.

Believed to be the first quarter-pound can filler to be put into actual commercial operation is the Rooney machine, invented and manufactured by W. E. Rooney in Bellingham, Wash. First commercial installation consisted of two of these machines which operated during the Sockeye season in the Bellingham cannery of the Columbia River Packers Association.

With two women feeding, each machine delivered a minimum of 65 filled cans per minute. Three women on the patching table were able to correct any filling faults in the combined product of the two machines. Thus the five women and two machines produced 130-140 satisfactorily filled cans per minute. Workmanship generally was rated altogether acceptable for quarters.

- In the closing days of 1960 one of the most perceptive individuals in the primary salmon sales field summed-up the situation in these words:

> *"Percentagewise, the 1960 pack is more heavily shipped-out than has been the case at the end of any year since World War II."*

At that time there were still shipments to be made on commitments to buyers; but he was speaking of the percentage of the pack which had actually been *shipped* before year-end.

At that time Alaska Reds were the sole item in which new business could be accepted. Red talls were in good supply, and halves adequate. Puget Sound Sockeyes, on the other hand, were extremely scarce.

INITIAL PRICES FOR CANNED SALMON

(Per case of 48 cans. Prices in dollars and decimals)

YEAR	Chinook Columbia Riv. Fancy	Sockeye Puget Sound	Red Alaska		King Alaska	Coho — Medium Red		Pink		Chum	
	Halves	Halves	Talls	Halves	Talls	Talls	Halves	Talls	Halves	Talls	Halves
1910	$4.4	$4.4	$5.4	$4	$5.4	$5.	$3.2	$3.2	...	$3.1	..
1911	5.2	5.2	6.4	4.5	7.2	5.8	4.	4.	$3.2	3.8	$3
1912	5.	5.2	5.6	4.6	5.6	4.6	3.2	2.6	2.2	2.5	2.
1913	5.	4.2	4.6	3.8	4.	3.4	2.8	2.6	2.2	2.2	2
1914	5	5.4	5.8	4.4	5.6	4.6	3.3	3.6	2.8	3.4	2.6
1915	5.	5.4	6.	4.6	5.	4.6	3.	3.	2.3	2.8	2.1
1916	5	5.6	6	4.8	5.4	5.2	3.6	3.6	3.	3.4	2.7
1917	7	7.	9.4	6.6	9.	8.	5.4	6.6	4.6	6.4	..
1918	8	8.	9.4	6.6	9.	9.6- 9	6.4	6.6	4.6	7. - 6.4	4.4
1919	8.	10.	13.	9.	12.5	12	8	9.	5.6	8.6	5.
1920	10.	12.	13	9	12.	8.	6.	6.	4.4	4.6	3.6
1921	8.4	10.	9.4	8.	7.	6.	3.8	4.4	3.2	4.	2.6
1922	13.	10.	9.	7.	7.	5.	4.	4.6	3.2	4.2	2.8
1923	10.	10.	9.	6.6	8.	5.6	4.	5.	3.6	4.8	3.4
1924	8.8	9.	9. -10.	6. - 7.	8.6- 8.4	7. - 6.	5.4- 4.2	5.2- 5.	3.6	4.8	3.4
1925	8.4	9.4-10.	14.	9.	13. -12.	11. -10.	7.4- 7.	5.8- 5.	4. - 4.4	4.6- 4.4	3.6- 3.4
1926	9.4	10.	10.	8.	9.	9.	6.	5.4	4.2	5.	3.6- 3.2
1927	9.4	11.	12.4	9. - 8.6	11.4-10.6	10. - 9.	6.6- 6.	6. - 5.4	4.6- 4.4	5.4- 5.2	3.8
1928	9.8	10.4	9.4	7.4	8.6- 8.	7.4- 7.	5.4	6.6	4.4	6.4	4.
1929	10.4-10.	10.	10.6	8.	9.	8. - 7.4	5.6- 5.4	6.	4.4	5.4	4.
1930	10.	8.	12.4	8.	10.6	9.	5.6	4.	3.	3.6	2.8
1931	8.	8.	9.4	6.6	7.	7. - 6.4	4.8- 4.6	3.4	2.8	3.2	2.6
1932	6.	6. - 5.	5.8- 5.	4.	4.4	4.	3.2- 3.	3.4- 3.	2.4	3. - 2.8	
1933	7.6- 7.	7. - 6.6	7. - 6.6	4.8	6.	5.4	...	4.8	3	4.6	2.8
1934	7.2	5.4	6.8- 6.4	4.8- 5.	5.4	5.	4. - 3.8	4.2- 4.	3.2	4. - 3.8	3.
1935	7.2- 7.	7.	9.4- 9.	6.6- 6.4	8. - 7.	6.6	4.4	4.2- 4.	3.2	4. - 3.8	
1936	8.	7.	8. - 7.6	6.	7.	6.6- 6.4	4.4	4.	3.4- 3.	3.7- 3.6	3. - 2.8
1937	8.4	8.4	10.	6.8	9.	8.	5.	5.	3.4	4.8	3.2
1938	9.2- 8.4	7.	7.8- 7.4	5.6	7.6- 6.8	6.4	5.	4.	3.	3.8- 3.6	2.8
1939	9.2- 8.6	8.	9. - 8.6	6.7- 6.4	8.4	7. - 6.4	5. - 4.8	5.2- 5	3.6- 3.4	4.6	3.2
1940	9.	8.4	9.6	6.6	9.2	7.4	4.8	5.4	3.8	4.8	3.4
1941	10.4	10	13.6-13.4	8.2	12.	...	7.	7.	4.8- 4.4	6.8	4.6- 4.2
1942	13	11.4	15.	10.	...	11.8-11.6	8	8.	5.6	7.6	5. - 5.4
1943	13	11.4	15.	10.	14.	11.8-11.6	8.	8.	5.6	7.6	5. - 5.4
1944	13	11.4	15.	10.	14.	11.8-11.6	8.	8.	5.6	7.6	5. - 5.4
1945	13.	11.4	15.	10.	14.	11.8-11.6	8.	8.	5.6	7.6	5. - 5.4
1946	18.5	19	22. -20.	16.5-13.4	20.	17. -16.	11.6	12.	8.4	11.6- 9.4	8.
1947	20. -19.	22 -19	24.5-22.6	17.5-16.	22. -21.4	22.	15.4-15.	19. -17.2	13.5-11.5	18.5-16.5	12.5-11.1
1948	23.5-22.	22.	27. -26.	19. -18.	26. -24.	25.	17.5-15.	23. -22.	15. -13.	20. -22.	13.5-12
1949	20. -18	..	26.5-25.	16. -15.	24. -22.	22. -21	12.5	16.	10.	15.	9.5- 9.
1950	19. -21.	19 -20.	28. -29.	18.	23.	19. -22.	15.5	22. -24.	15.	20. -21.1	12.
1951	21. -23.	19. -21.	29. -31.	18.	26.	25.	15.	21.	12.5	18.	11.
1952	22. -23.	20. -19.	27. -30.	17.5-18.	25.	21.22.	12. -13.	18. -20.	12.	16.	9.
1953	20. -21.	18.5-17.5	27.	17.	24.	20.	12.	18.	10.2-10.5	14.	8. -8.5
1954	20. -21.	18.5-16.5	28. -29.	16. -18.	25.	23.	13.5	20.	12.5-13.	15.	9.
1955	22. -23.	20. -21.	32. -33.	18.5-19.7	28.	26.	15.	22. -23.	13.5-14.5	18.	10. -10.5
1956	23. -24.	23. -24.	33. -34.	21. -23.	29. -30.	28.29	16.	23. -24.	13. -14.5	21.	11.5-12.
1957	24. -26.	23. -24.	33. -34.	21. -22.	28. -29.	27. -28.	15. -16.	23.	13.	19. -21.	11.5-12.
1958	25. -26.	19. -21.	33. -35,	18. -21.	28. -29.	27. -28.	15. -16.5	21.	13. -13.5	17.	11. -11.5
1959	25. -26.	24. -25.	36. -37.	23. -24.	29. -30.	29. -32.	18. -18.5	24. -25.	13.5-14.	21.	11.5-12
1960	26. -27.	24. -25.	36. -37.	24. -25.	31. -32.	31.	18.5-19.	24. -25.	13.5	22.5	12. -12.5

NOTE: The title of this tabulation has been changed from "OPENING PRICES" to "INITIAL PRICES", and the prices of pre-war years, originally quoted per dozen each are converted to the per case basis which is now in general use.

The prices here quoted for the war years are the "ceilings" established by the government. Those for 1946 are the prices announced by the majority of large packers after "de-control".

The prices are quoted in dollars and decimals thereof, rather than in dollars and cents, and are based largely on formal "opening prices" announced as such by leading sellers; they are not limited exclusively to such quotations. The formal "opening prices" of different concerns are often incomplete, and vary so widely that a full presentation of them might be confusing. The purpose of this tabulation is to present comprehensively for each year the earliest prices at which substantial quantities of the pack were sold.

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British Columbia

- With so little to sell, as a result of one of the worst fishing years in provincial history, salmon marketers in British Columbia experienced a bleak and hungry season in the fall of 1960. It was certainly not a year when aggressive selling brought its usual rewards. Broadly speaking, the salesmen could have sat on their hands all year and come up with approximately the same results as if they had been really hustling.

But the overpowering problem of salmon marketing in B.C. is the continuing prospect of consumer resistence to sky-rocketing prices. In 1958, the season of the big pack on the Fraser, export prices for Sockeye halves averaged $18.50 a case, which was considered relatively high at the time. In 1959 the price advanced to $23, and in 1960 it rose to $25. "How long," packers, brokers and exporters asked, "could the market stand such steadily rising prices?"

They had at least part of their answer during the season just passed because they found the United Kingdom, usually anxious to buy the limit on Sockeyes, was for the first time shopping elsewhere—almost solely because of price. There were no large purchases by the U.K.'s wholesale houses at all. Nearly all the canned salmon marketed there from B.C. went to the "big label companies." The U.K. regarded halves disdainfully and bought virtually nothing in that category.

- It was a frustrating situation because the U.K. was free of the artificial restrictions that had hampered that market for so long. In a year when theoretically that market was wide open, B.C. exporters were able to offer very little and what little they had was costing too much to attract buyers.

The entire pack of salmon was only about 630,000 cases, the smallest in 40 years, and the Sockeye pack totalled only about 227,000 cases, about one-quarter the size of the Bonanza pack of '58. But that wasn't all. Pink, Coho and Chum packs were also abnormally low, much lower than anyone had expected. Under those conditions there was no opportunity of trying to placate customers by asking if they wouldn't diversify their orders instead of insisting on specific grades, because there wasn't enough salmon in any one species to draw on for such replacements. Making allowance for the anticipated modest pack of Sockeyes, over-all B.C. salmon pack was short of expectations by about 4400,000 cases.

U. K. Salmon Imports

(Eight months ending Aug. 31, 1960)

Source	Pounds
Canada—	
Atlantic	470,200
Pacific	550,100
United States	260,600
Japan	2,124,000
Norway	903,500
TOTAL	**4,308,400**

- There was another difficulty:

The B.C. salmon canners, much as they valued their traditional British market, were obliged to make a reluctant decision when they gave priority to domestic label outlets. After all, when the chips were down, the most dependable sales territory was the home market, where most of the sales promotion had been directed in recent years to build up brand names and where there was no uncertainty over sudden tariff changes, dollar shortages or quotas.

But, as the season ended, marketers could not help looking ahead to 1961 and 1962 when they would be faced with the reverse of the 1960 situation—the probability of an abundant pack and the problem of selling it at a price level far higher than the average consumer could accept. To bring the price of canned salmon down to a reasonably saleable level is the objective for 1961, but how it can be accomplished is a question unlikely to be settled until bargaining is concluded between fishermen and operators at the outset of the new season, if then. Raw fish unit costs, restricted fishing, higher expenditures in cannery operations and other incidentals have created a built-in economic straightjacket from which the industry will have to extricate itself somehow.

- In overseas markets other than the U.K., the trade witnessed some hopeful developments. New Zealand's import quota was increased 150% and Australia gave indication that licensing would soon be over. Comparatively large quantities of frozen salmon were exported, but at abnormally high prices. France was paying 85c a pound for Blueback, presumably for the tourist trade. New Zealand proved one of the most active overseas markets, buying Pinks principally. The U.K. market absorbed frozen Springs at 90c.

For the first time, at least one Canadian company imported canned salmon for domestic distribution from the Alaska pack, but the shipments were in talls, a size somewhat unpopular in the Canadian market, and at $1.20 a can definitely in the luxury class for most consumers.

BRITISH COLUMBIA CANNED SALMON PRICES

	SOCKEYE			COHO, SPRING, BLUEBACK			PINK			CHUM	
YEAR	1-lb. Talls or Flats 48's	$\frac{1}{2}$-lb. Flats 96's	$\frac{1}{4}$-lb. Flats 96's	1-lb. Talls or Flats 48's	$\frac{1}{2}$-lb. Flats 96's	$\frac{1}{4}$-lb Flats 96's	1-lb. Talls or Flats 48's	$\frac{1}{2}$-lb. Flats 96's	$\frac{1}{4}$-lb. Flats 96's	1-lb. Talls or Flats 48's	$\frac{1}{2}$-lb. Flats 96's
1942-4b	$16.25	$17.50	$10.50	$11.50	$12.75	$ 8.12$\frac{1}{2}$	$ 6.25	$ 7.50	$ 5.00	$ 6.25	$ 7.50
1945-6b	17.65	18.90	11.20	12.90	14.15	8.82$\frac{1}{2}$	7.65	8.90	5.70	7.65	8.90
1946-c	18.90	20.30	...	13.90	15.25	...	8.30	9.70	...	8.30	9.70
1947	23.50	25.00	15.00	20.00	21.50	13.00	12.50	14.50	...	12.00	13.50
1948	28.50	30.00	17.50	24.50	26.00	15.25	16.50	18.00	...	15.00	16.50
1949	31.50	33.00	19.00	23.50	25.00	15.00	16.50	18.00	...	12.50	14.00
1950	31.50	33.00	19.25	23.50	25.00	15.00	17.50	19.00	12.00	14.00	14.00
1951	36.00	38.00	21.50	27.50	29.00	17.00	19.00	20.50	12.75	16.50	18.00
1952	31.50	33.00	19.00	20.50	22.00	13.50	15.00	16.50	10.75	13.00	14.50
1953	28.50	30.00	17.50	20.50	22.00	13.50	15.00	16.50	10.75	13.00	14.50
1954	30.00	32.00	18.50	22.50	24.00	14.50	16.00	17.50	11.75	14.50	15.50
1955	35.50	37.00	21.50	26.50	28.00	17.00	18.00	19.50	12.75	15.00	16.50
1956	38.50	40.00	23.00	30.50	32.00	19.00	21.00	22.50	14.25	19.00	20.50
1957	38.50	40.00	23.00	27.50	29.00	17.50	21.00	22.50	14.25	18.00	19.50
1958	35.50	37.00	21.50	26.50	28.00	17.00	20.00	21.50	13.75	15.00	16.50
1959	40.00	46.00	27.00	32.50	36.00	22.00	22.00	24.50	16.25	19.00	20.50
1960	44.00	50.00	29.00	34.50	40.00	24.00	25.00	26.50	17.25	21.00	23.00

NOTE: Quotations for 1948 and 1947 packs represent packers' opening prices to the domestic market. Prices received for 1950 sales under the contract to the United Kingdom were considerably less than those quoted. Prices marked 'c' were established by the Canadian government in Dec. 1946, for sales to the domestic trade, but are also roughly equivalent to those received for export to the United Kingdom, etc. Prices marked 'b' were those paid by the British Ministry of Food in 1945-46 and 1942 to 1944.

In 1954 there was considerable variation in prices by major packers, especially for Sockeyes and Chums. Two prices were paid for Chums, according to grade, Fancy, $14.50 & $15.50; Standard, $13 and $14.50.

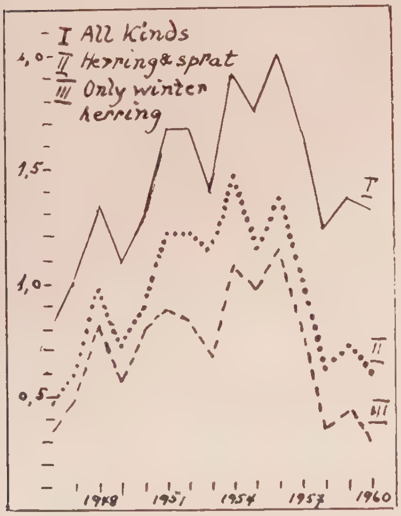
NORWAY

By W. NITTER EGENAES

● Low level of Norway's winter herring and cod fisheries were giving concern as 1960 closed.

The failure in these fisheries had reduced the country's aggregate landings from a peak level of almost 2 million metric tons in 1956 to about 1.3 million tons in 1960. The winter herring fishery produced 1,145,859 tons at a first hand value of 248.7 million kroner during its record season in 1956. In 1960 only 300,143 tons worth 83.4 million kroner were landed, while the prospects are still gloomier for some years to come. In addition, 1960 has confronted the industry with a general shrinkage in cod landings, probably as a result of overfishing. The resulting lower incomes are of course a grave matter for the fishermen, as are the shorter raw fish supplies for the processing industry.

Norway Fish Production Showing Herrings' Share
(In Millions of Tons)



The 1956 record climaxed a vertually unbroken period of prosperity beginning in 1946 with landings of 818.617 tons at a value of 217.6 million kroner. The fish stocks were ample, and the production was stepped up by new acquisitions and modernization. In short: the conditions for creation of prosperity were present.

Herring and Sprat

● Importance of Norway's total landings of herringlike fish as well as of winter herring in relation to the country's aggregate fish landings is shown in Chart I.

The winter herring fishery takes place on the Norwegian west coast through an 80 to 90 days season (January-March). The catch is made from the mature members (28-33 centimeters) of the Scando-Atlantic herring tribe, probably the world's mightiest, which enter Norwegian coastal waters for spawning from the middle of February to the end of March.

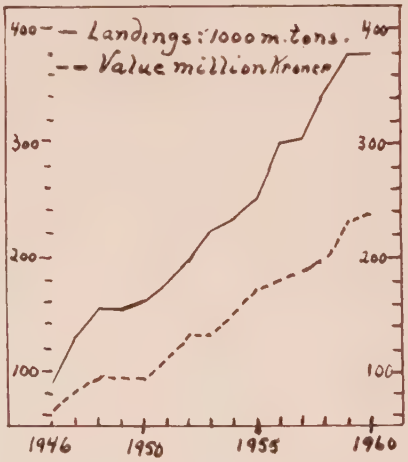
Scientific forecast of the winter herring fishery of the early months of 1961 indicates a catch of only 200,000 metric tons, and gives some idea as to how the stocks have declined.

Sixty percent of the winter herring landed in 1960 were of the 1950 year-class. As no intermediate year class except possibly that of 1959 is of any appreciable size, improvement may not occur earlier than 1963, when this class begins to attain maturity. The big 1950-class now draws near exhaustion.

This development has little if anything to do with overfishing, but must be explained by long-termed alterations of current, sea composition and temperature. The result has been a displacement northwards of the main spawning area to less receptive fields. The fishery center has been subject to a parallel displacement, which in the course of 10 years has ranged over a distance of 300 nautical miles or from Haugesund to Aalesund. Besides, offshoot bodies of herring were in 1960 as well as in 1959 found as much as 600 nautical miles north of the normal grounds.

According to historical records, the winter herring fishery of Western Norway has developed periodically. The periods of good fishing have lasted 50 to 70 years, with intervals of extremely poor fishing or fishing at other locations of a duration of about 30 years. The present situation has points of similarity with those which marked the final phase of the preceding good period, ending around 1870.

Fish Production of Norway Excluding Herring and Cod



The failure of the winter herring fishery has entailed stronger pursuit of alternative catch objectives. It may be mentioned that the traditional herring curing campaign off Iceland has been expanded by addition of a fleet only for supplying raw material to the home reduction industry. More purse seiners take part in the capelin fishery (Finnmark waters from middle March to middle May) than formerly. Besides, several purse seiners have changed to trawl gear for exploitation of North Sea fish suitable for reduction or other processing.

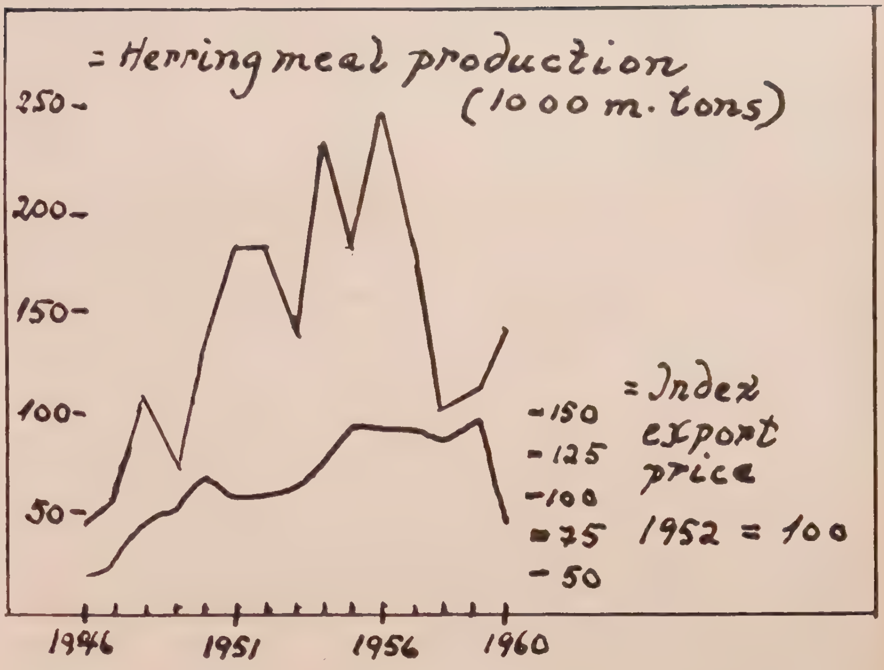
- The effects of the collapse of world fish meal markets last year have widened the difficulties brought upon the herring industry through the loss of the majority of its most valuable raw material—the winter herring. The industry in 1960 did not however, directly feel the effect of the weak fish meal prices. The fishermen on the contrary enjoyed even higher prices for their catches than in 1959, and reduction plants, having been capable of obtaining appreciable rawfish quantities, have also operated at a profit. This was accomplished by help of a Herring Fund, set aside by Government intervention when times were better. Costs amounted to 55 million kroner and left a capital of 45 million kroner.

In order to overcome the supposed worsening of the coming winter herring season and the effects of the weak meal market at a similar arrangement, which also includes direct governmental subsidy of 20 million kroner is planned for 1961. The prices to be paid for raw material for reduction will, however, be considerably reduced, while utilization of as much as possible of prime herring for consumer products will be sought. In this connection it must be added that several meal plants have now installed machinery for filleting of herring and only intend to use offal for reduction.

The Cod Fisheries

- Few kinds of fish are as eagerly fished for as the North Atlantic cod, in which a certain shortage seems to develop, and causes common worries. In the case of Norway a recent scientific forecast says that 25% less than the 1960 cod will reach the Lofoten spawning grounds in 1961. Landings were 37,387 tons in 1960.

General concern was expressed last autumn over the state of the Norwegian-Arctic cod tribe during a meeting of the International Council for the Exploration of the Sea in Moscow. A resulting joint suggestion of an enlarged mesh size of trawl nets seems to be on the way.



The Norwegians register four types of cod. The two most important are the "skrei" (spawning cod) and the "Loddetorsk" (Finnmark spring or young cod), which are made up respectively of the mature and the immature members of the Norwegian-Arctic cod tribe and have the Barents Sea and adjoining western waters as normal range. The spawning migration of the tribe goes to the Lofoten and other coast grounds of North Norway, where the traditional and important "skrei" fisheries take place during the first quarter of the year. During the second quarter a subsequent migration of the immature tribe members takes place to Finnmark waters, and occasions a lively fishing.

The "skrei" are the mature (7 years) and big fish (3,2 kilos or more headed and gutted), which form the raw material base for the production of first class klipfish, stockfish and fillets. The young cod is smaller (average weight 2 kilos headed and gutted) and bring a lower price. The products are therefore also suitable for lower priced markets.

The Norwegian-Arctic cod population since the 1920s has been increasingly exploited by the trawler fleets of several European countries. Since World War II the Russians have developed an enormous fishing fleet, which has joined the fishery. The results have been more and more evident—fewer cod are given time to mature, and the aggregate catches are on the decline.

This development and the conflicts between the trawlers and Norwegian fishermen using stationary gear have contributed towards Norway's decision of extending her sovereignty over fisheries from 4 to 12 miles.

The present Norwegian groundfish shortage is also a consequence of the development since the war of a rather extensive fillet freezing industry, whose raw fish demand must be added to that from the traditional processors of klipfish, stockfish and iced fish. Following the war a decline in importance was forecast for these older methods of preparation. In reality, however, events have refuted this assumption, and today the extended demand exceeds the production capacity of the traditional freehold units of the inshore fleet. At least a partial recovery of deep sea trawling and longlining is therefore the present aim.

Some of the freezing plants have acquired trawler fleets of their own, and some of them have stern-fishing distant water trawlers under building.

Norway Fish Production and Value 1956-1960

Product	1956		1957		1958		1959		1960	
	Metric Tons	Million Kroner	Metric Tons	Million Kroner	Metric Tons	Million Kroner	Metric Tons	Million Kroner	Metric Tons	Million Kroner
Herring and Sprat	1,380.13	318.8	1,019.79	257.6	613.20	165.6	727.80	215.5	680.33	195.7
Cod and By-products	307.19	213.2	249.14	183.3	281.20	217.0	267.29	218.5	225.10	192.8
Other Fish	298.98	179.2	304.96	185.8	344.45	199.7	365.33	232.6	401.66	253.2
TOTALS	1,986.30	711.2	1,573.89	626.7	1,238.85	582.3	1,360.42	666.6	1,307.10	641.7

Norway Cod Landings by Types

(Data in metric tons of fish, dressed headless)

Type	Average 1950-55	1956	1957	1958	1959	1960
Skrei (Mature Cod)	99,514	110,351	59,497	70,589	89,826	71,667
Finnmark (Young Cod)	32,290	52,695	52,143	69,299	52,484	39,392
Other Types of Cod	83,313	118,887	117,829	119,778	110,639	97,000
TOTALS	215,117	281,933	229,469	259,666	252,949	210,803

It must also be mentioned that the National Food Workers' Union has firmly demanded the Norwegian market be opened for landings of groundfish from foreign trawlers. This would involve amendment of the Norwegian trawler law, as acquisition of fishing vessels by companies other than those established by the fishermen themselves have required dispensation from the present law regarding the rights to ownership of such vessels.

Other Important Varieties

- There is manifest in the Norwegian fisheries a rapidly rising trend of production of minor varieties such as capeline, sandeel and Norway pount, all of which are low-priced fish used for bait or oil and meal production.

In this group are several varieties which have been undergoing significant growth, in inshore as well as offshore fishing; and new catch records are frequently registered in these categories.

In addition to the low-priced varieties mentioned before, the more important contributors are: saithe, haddock, ling and tusk, all related to the cod; halibut, Greenland halibut, Bluefin tuna, mackerel, dogfish, Atlantic salmon and deep water prawn.

The resources, especially of saithe are considered ample. About two-thirds of the cod-related minor species are taken by purse seine nets.

Norway "Shoal" Fish Landings

Variety	1956 Metric Tons	1959 Metric Tons	1960 Metric Tons
Winter Herring	1,145,859	416,360	300,143
Fat and Small Herring	195,369	225,407	276,422
Icelandic Herring	26,291	55,280	75,910
Capelin	66,079	78,967	92,765
North Sea Herring*	5,308	16,862	15,999
Sandeel*	1,435	7,977	12,733
Norway Pout*	...	20,000	23,495

NOTE: Capelin, Sandeel and Norway Pout are used only for reduction. *Taken by trawling.

- Norwegian deep sea longliners find their best halibut fishing on the ridge between the Faroes and Iceland, on the grounds of the Denmark Strait, off Western Greenland and off Labrador and Newfoundland. About 1,700 tons of halibut were landed from grounds other than the ridge in 1960. The best fishing took place off Newfoundland, where the luckiest boats took 60 tons of halibut and additional catch of 30 tons of salted cod per trip. The fishing was, however, described as slower and more time demanding than in 1959. Prices were rather good: kr 4,- for white and kr. 2,90 per kilogram for grey halibut. Salt cod (very big fish) obtained kr. 2,60/2,70.

In home waters the halibut fishing has been rather stable on the typical longline fields off Sunnmore, while the catches on the trawling areas of the Barents are more or less accidental. The Greenland halibut (Rheinhardtius hippoglossoides) is a relative of the true halibut, but weighs only 3 to 5 kilograms round. It is found in considerable quantities on the deeper spots of soft or muddy bottom at depths of 100 to 300 fathoms from the waters off Vesteraalen to the Varangerfjord. It is a rather delicious fish with high fat content, but has been given little notice. The freezing industry has been able to step up export sales of Greenland halibut filets lately, which is the reason why a new catch record could be registered in 1960.

- Shoals or schools of Bluefin tuna appear off the western Norwegian coast during July. Until 1946 the fish was caught by harpoon handguns. Purse seining was tried successfully in 1948 and in 1955 landings of 10,423 tons (headed and gutted) were made by 433 purse seine outfits. The fishing was, however, extremely variable. Several outfits gave up and turned to other more stable fisheries. In 1960 only 86 outfits made landings, which amounted to 3,240 tons. The most successful outfit took 240 tons, worth 440,000 kroner. The Norwegian tuna purse seine net has a length of 350 fathoms and depth of 40 fathoms on the shooting arm and 50 fathoms in the centre of the nylon bag. The mesh size is 7.9 inches. A purse seine outfit consists of a 60 to 70′ deck purse seiner, an auxiliary of about 50′ for towing, and a motor-skiff. The fish is usually big—from 30 to 200 kilos and more. Some seasons do not see any small fish at all. The 1960 fish had an average weight of 150 kilos. The season is usually ended in the beginning of October.

- In a drive to make more economic use of their vessels than they may expect from winter herring fishing under the present state of this fishery,

Norway Miscellaneous Fish Catch & Value

Variety	1956		1959		1960	
	Metric Tons	1,000 Kroner	Metric Tons	1,000 Kroner	Metric Tons	1,000 Kroner
Saithe	69,334	32,275	92,608	42,099	76,274	42,241
Haddock	44,439	23,086	28,573	27,443	35,645	25,803
Ling	10,255	9,062	13,855	14,125	13,304	14,860
Tusk	11,061	6,288	15,841	11,279	20,121	15,975
Halibut	4,278	12,773	5,341	17,220	5,248	18,854
Greenland Halibut	3,493	2,005	4,394	3,034	3,240	6,000
Bluefin Tuna	4,135	6,899	2,491	4,136	6,367	4,441
Mackerel	13,850	8,077	17,389	11,349	19,733	12,298
Dogfish	20,814	7,135	18,976	7,528	25,594	10,958
Salmon, Atlantic	1,268	15,213	1,150	13,200	1,230	14,000
Prawn, deep water	6,317	18,765	9,638	30,100	9,496	29,423

Disposition of Norway Herring and Sprat Landings

(DATA IN METRIC TONS)

Year	Fresh	Frozen	Cured	Canned	Meal & Oil	Bait	Total
1956	66,028	45,268	138,377	32,073	1,077,663	20,722	1,380,131
1957	62,838	51,334	108,729	44,810	737,691	14,378	1,019,790
1958	35,515	40,212	110,047	31,067	380,371	15,992	613,204
1959	47,727	53,251	108,339	40,925	459,792	16,295	726,329

Norwegian owners have in cooperation with their Government and with a state guarantee of 75,000 kroner per vessel launched a tuna fishing venture in West African waters.

Eight combined purse seiners and longliners, which had spent the summer halibut-fishing in the northwest Atlantic, left their home ports in October, 1960. They are motor vessels of 100/115′, equipped with freezing plants suitable for North Atlantic summer temperature, but capable of cooling tuna in their fishroom at —5°C in tropical waters. For the African venture they are fitted with longline gear and some of them also with purse seine nets. On the fields they will cooperate closely with the freezer vessel *Carribia,* which will deep freeze the catches. Onboard the *Carribia* is also one of the Government's fish inspectors. The tuna catches, with a 7000 ton target were sold in advance to Star-Kist Foods, Inc. for processing at the new plant of this company at Mayaguez, Puerto Rico. Transshipment from the *Carribia* is, however, to take place in an African harbor.

- As to prawn fishing, the production has been steadily climbing by addition of new trawling fields. In 1959 prawns ranked seventh in landed value in the Norwegian catch. The Norwegian deep water prawn (*Pandalus borealis*) is mostly sold for fresh consumption to England, Sweden, the Netherlands and on the home market. The smaller sizes are canned.

About 85% of Norway's total fish landings are exported in some form or other. The home consumption is high and amounts to about 45 kilograms per capita per year.

Norway's membership in the EFTA has strengthened her sales possibilities for frozen fillets, canned goods, fresh fish and oils, while her fish trade with the European Common Market countries in the longer term may be endangered or hampered by higher duty rates. The markets for Norwegian fish products are, however, also to be found all over the globe. In 1960 sales of all groundfish products have been lively, while some of the herring products have moved slowly. This is the case with herring meal. Fish oils have been low priced through the whole of the year, but stocks are small. The trade, mostly in klipfish, with Brazil and some other Latin American countries has been unstable, but on the whole satisfactorily. Rather heavy sales of klipfish to Cuba have not been effected, as letters of credit have not been confirmed.

- The value of Norway's fish exports through 1960 are estimated at 900 million kroner compared with 1959 when they were 943.4 million kroner. Peak level was reached in 1956 with 1,042.3 million kroner. Fish and fish products make up for between a fifth and a sixth of the total value of all exported Norwegian goods.

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GUATEMALA

● Guatemala, largest and most populous of the five Central American republics, seems to have a gold mine in shrimp off her coasts, both Pacific and Caribbean. Like many gold mines, however, it has been of little value so far, because of the lack of adequate facilities for getting the gold out.

Nevertheless, during 1960 some promising beginnings were made. Guatemala's exports of shrimp for the month of December, 1960, were 40,000 lbs., and in September of the same year, 84,061 lbs. were landed, according to a Bureau of Commercial Fisheries report.

Guatemalan sources tapped directly by *Pacific Fisherman* are saying with some confidence that February, 1961, will see exports of 300,000 lbs. of shrimp selling at an average price of 80¢ a lb. (The Guatemalan unit of currency, the Quetzal, is pegged to the U. S. dollar by statute, so 80 cents is 80 cents any way you look at it.)

The Bureau of Commercial Fisheries quoted reports stating that landings (heads-off weight) were as follows:

While the Atlantic fishery of Guatemala formerly produced the greater quantity of shrimp, recent periods indicate the Pacific side is far ahead. For example, U. S. Bureau of Commercial Fisheries statistics for headed shrimp landings in Guatemala show:

July-December, 1959—Pacific, 28,125 lbs.; Atlantic, 58,995 lbs.; total, 87,120 lbs.

January-August, 1960 — Pacific, 264,602 lbs.; Atlantic, 71,459 lbs.; total, 335,961 lbs.

In September, 1960, Pacific landings were 84,061 lbs., with no data for the month's landings on the Atlantic side available.

● There were some significant developments in 1960 in the Guatemalan shrimp fisheries.

A Japanese fishing company was granted rights to fish in Guatemalan waters, under certain conditions and with certain concessions: (1) Vessels engaging in the fishery could do so for six months before having to enter Guatemalan registry; (2) The fishery company could sub-contract its fishing with government approval; (3) Refrigerator boats must have Guatemalan registry; (4) The company must sell to the government all it may require at a government-fixed price, which must not be less than the cost of production. The company was given the right to rent government land for five years. and was granted the usual concessions for importation of equipment duty-free, under the Industrial Development Law.

In September, 1960, a new Guatemalan fishery company was organized, and was given Government recognition as a legal company. It is not known whether this firm has actually engaged in fishery operations yet, but its name is Pesca, S.A., which means Fisheries, Inc., and its executive and corporate staff appears to be entirely Guatemalan. Its president is Sr. Domingo Alejandro Moreira Martinez, and all its other officers seem to be Guatemalan citizens.

● On the Pacific side, where the best shrimp grounds are apparently located, the great handicap so far has been the lack of a suitable port. The republic's only processing plant is in Champerico, on the Pacific side not far from the Mexican border. This plant is said to have a capacity of five tons a day, and it has been processing shrimp from both coasts. But the difficulty of landing shrimp at Champerico is such that a great part of Guatemala's shrimp has been taken to Salina Cruz, Mexico, and there processed for export to the U. S.

On the Caribbean, or Gulf of Mexico side, where Guatemala's best and only deep-water port, Puerto Barrios, is located, the shrimp fishery is not as productive nor as steady as on the Pacific, nor is the coast line as long. Gulf shrimping is seasonal, the fishing being not so good between March and June. On the Pacific side, white shrimp are found in shallow water and brown in waters over 20 fathoms deep. There are said to be five different varieties of shrimp in Guatemalan waters, and the fishery could be year-round on the Pacific side.

It is estimated that with suitable landing facilities, Guatemala could probably produce 4,000,000 lbs. of shrimp a year. Exports to the U. S. in 1959, reported by the Census Bureau, were 182,232 lbs. valued at $133,372.

● There is one factor in the Guatemalan situation which may have a good effect on the shrimp fishery. The present administration, headed by President Miguel Ydigoras Fuentes, is anxious to develop a Coast Guard suitable to the needs of the Republic. Guatemala, indeed, is the only Central American nation to own a freighter, which it purchased some years ago from Sweden, mainly to train young Guatemalan naval cadets in real seamanship. If someone could convince the authorities that a modern, efficient fishing fleet could be the nucleus of an excellent, though small, Coast Guard, there might be greater official interest in developing the Guatemalan fisheries.

MEXICO

● Shrimp is Mexico's most important fishery product, and the Mexican West Coast is the Republic's most important shrimp producing area. In 1958 and 1959, production records were broken.

But the year 1960 was a period of turmoil in Mexican shrimping. Fortunately, it seems to have had a happy ending, for by late Fall, when the shrimp season is at its best, the disputes between fishermen and boat owners had been settled, the fleets of both coasts were out fishing, and catches were reported "good" in Guaymas and north of Mazatlan, and "fair" below that port. On the Gulf of Mexico coast, both ports of Carmen and Campeche reported improved landings. So 1960 may not turn out to be a third-straight record year, but it will probably wind up a good one.

At the beginning of the year, prospects were so dim that the shrimp industry was about to ask the Government for relief in various ways. In an impasse on price between the boat owners and the fishermen, the Guaymas shrimp fleet (about 150 boats) tied up and remained so until late March. But the Salina Cruz, Mazatlan and east coast fleets continued to fish with good luck, some of the Salina Cruz boats bringing in as much as eight tons of headless shrimp from a 12-day trip. And on March 22 the Guaymas fleet settled its troubles and put to sea—with the exception of a number of boats which had suffered damage during the tie-up and had to remain in port for repairs.

In Campeche on the Gulf coast, a furious war raged in the Spring between two companies for control of the fleet. In the heat of the conflict, ex-vessel prices went up four times in 14 days.

Meanwhile, Mexican producers and US importers alike were alarmed by the action of U.S. Gulf of Mexico shrimp interests, which succeeded in bringing about US Tariff Commission hearings on import quotas or tariffs, or both, on Mexican shrimp. Two representatives of the Mexican National Chamber of the Fishery Industry testified against the proposals, and California importers also lent their weight to the opposition.

● One fundamental trend which may be more important than the passing ups and downs of the industry is the tendency toward exporting peeled and de-veined shrimp from Mexico. This trend has gone on for years, and has now reached the point where it is said that about 80% of the Carmen-Campeche crop is being shipped peeled and deveined.

In late summer, Mexico's third shrimp breading plant was operating in Salina Cruz, on the southern West Coast. When this plant gets into full operation, Mexico will have a total breading capacity of 15,000 lbs. of shrimp in eight hours. There are two plants in Salina Cruz and one at Puerto Mexico on the Gulf coast.

Breading and peeling-deveining in Mexico means, of course, that Mexican producers command a higher price per ton for their product, and that Mexican workers get the benefit of the employment created by the processing operations. Shrimp, by the way, was Mexico's third most valuable export item in 1959, with a value in US dollars of 38,879,200, or 89.4% by value of all fishery products.

Mexican Exports of Shrimp

(Statistical Annual of the Foreign Commerce of Mexico)

Destination	1959 Metric Tons	1958 Metric Tons
USA	29,665.5	25,546.5
Japan	..	133.7
Nicaragua	37.1	..
France	10.0	..
Guatemala	7.6	2.0
Jamaica	4.5	..
Germany	..	12.0
Canada	..	11.3
Netherlands	..	nom.
Total	29,724.7	25,705.5

Increase, about 16% in volume, 22% in value.

Production figures are not complete at this writing, but export figures are, and they give an idea of Mexico's progress in the shrimp business.

● Although most of the fish canned in Mexico goes to the home market, the Republic's canneries exported 2233.8 metric tons of abalone in 1959, and 282.1 metric tons of shrimp.

The canning industry is centered pretty well in Lower California, where 13 of the 26 canneries listed by the US Fish & Wildlife Service are located. Furthermore, the Baja California canneries are mostly real fish canneries, whereas many of those located in the interior (including Mexico City) are specialty canners producing some fish.

Mexican Pack of Canned Fishery Products

(Source: US Bureau of Commercial Fisheries)
(In cases of 48 cans

Item	1959	1958
Sardines, 1 lb.	435,000	334,000
Abalone, 1 lb.	83,000	106,000
Shrimp, 11 oz.	88,000	96,000
Tuna, 7 oz.	65,000	80,000
Mullet, 1 lb.	35,000	30,000
Mackerel, 1 lb.	5,000	25,000
Miscellaneous	20,000	15,000
Total	731,000	686,000

● The value of the Mexican canned pack in 1959 was estimated at U.S. $9,048,000, as against U.S. $9,016,000 for 1958. As can be seen from the table above, sardines are Mexico's most important canned pack, and this is true in terms of dollar value as well as quantity. For many years, Baja California canneries have produced sardines for US canners under their labels, but according to the Bureau of Commercial Fisheries there were no custom packs for U.S. canneries in 1959. Mexican sardines are packed natural, in tomato sauce and in mustard, and most of the pack is consumed in Mexico.

The abalone fishery, like that of all sea foods, (excluding finny fish) is reserved for the co-operatives, which are associations of working fishermen, not boat-owners as in the U. S. Like sardines, abalone are exclusively a Pacific Coast crop. The bulk of the abalone pack is sold in the Far East, mostly through brokers in San Diego.

The tuna pack for 1959 was under the 1958 pack, a condition said to have been caused by a large carry-over. At the same time, the import statistics show greater quantities of tuna purchased for import in 1959 than in 1958. Tuna canning in Mexico, mostly in Baja California, is a comparatively new industry, and is expected to grow. Mexican canners have acquired a number of tuna seiners from California boat-owners in recent years. So far, however, the Mexican canned tuna pack has been consumed in Mexico.

● Mexican exports of canned fishery products went almost entirely to the U. S., although the bulk of the abalone pack was re-exported to the Far East.

Mexican Exports of Canned Fishery Products, in US Dollars

(Source: Anuario Estadistico del Comercio Exterior de los EU Mexicanos)

	1959	1958
Abalone	2,680,812	2,700,900
Shrimp	320,000	50
Shellfish	537	1,500
Oysters	150	213
Sardines	12	220,000
Miscellaneous	120	27,000
Salmon	...	500
Mackerel	...	12
Total	3,001,631	2,950,175

Of the $3,001,631 sold abroad by Mexican canners in 1959, $2,999,950 worth went to the U. S. The 1958 figure was $2,945,122 out of the total export value of $2,950,175. Other importers from Mexico, all of whom bought less in 1959 than in 1958, were Venezuela, Guatamala and France.

On the other side of the trade picture, Mexico bought fishery products from a long list of nations, but her balance of trade is overwhelmingly favorable, for her total imports amounted to only U. S. $1,025,850 in 1959 and U. S. $918,637 in 1958, according to figures given in pesos by the *Anuario Estadistico*.

In 1960 the Rodriguez interests, which own a large share of the fishing and canning facilities in Lower California, established a new industry, the freezing of abalone steak for the U. S. trade. Co-operating with the Rodriguez group, Wilbur-Ellis Co., through its subsidiary, Marine Products Co. of San Diego, Calif., established a freezing operation at Turtle Bay down the Baja California peninsula from Ensenada, and later another at Cedros Island, off the Baja California coast. A third freezing plant is owned and operated by Ernesto Ruffo at Asuncion Bay. Abalone steaks have long been a delight to California gourmets, and the new freezing operations should make it possible for other Americans to share the joy of eating them.

● In 1959, Mexican fish-meal plants, most of which are antiquated and inefficient, produced 2,000 or 3,000 tons of meal. In 1960, the production was expected to be considerably greater, because a modern plant, producing fish-meal as a prime product and not a by-product, was to be in full operation.

But Mexico has no ambition to get into the rough-and-tumble world fish-meal market. Last summer, the Government put meal on the list of imports on which a prior import license is required before the product can be brought into the country from abroad. This has the effect of assuring that Mexico's own meal will be consumed before any is brought in from abroad.

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ARGENTINA

- For a nation with a coastline close to 2000 miles in length and a continental shelf said to cover more than half a million square miles, Argentina to the present has a rather limited fishing industry, but her fishery executives, with energy and persistence typical of Argentine businessmen, are tireless in their efforts to improve conditions, and last year the government took measures to encourage their enterprise.

Among them:

An exemption from import surcharges was granted on new vessels up to 3000 tons gross for use in fishing or in refrigerated transport. Since the surcharges amounted to as high as 150%, the exemption is a substantial relief, but it applies only to new vessels.

Second, a subsidy was put in effect to help Argentine boat-builders who stand to lose business by the easing of import requirements.

Third, an exemption from import surcharges was decreed on all industrial machinery in good condition and of the manufacturer's latest model. This exemption, as reported to *Pacific Fisherman* by the Chamber of Fish Processors of Mar del Plata (*Camara Marplatense de Industriales del Pescado*) is extended only to the end-user of the machinery.

On still another front, the Government and the industry are united in a growing propaganda effort to get Argentines to eat more fish. This would serve a double purpose: to help the fishery industry, and to liberate more beef for export, thus improving Argentina's export-import trade balance.

But any real increase in the demand for fish would, some say, put the industry on an embarrassing spot unless something is done to increase production of fish to meet such a demand.

Equipment must be modernized all along the line, from vessels and tackle to port, canning and processing equipment. Otherwise, the demand might outstrip the supply, and the effect of the promotion might be lost.

- The total catch of salt-water fish and shellfish, as reported by the U.S. Embassy in Buenos Aires, gained about 7%, from 67,561 metric tons in 1958 to 72,284 in 1959, last complete year for which statistics are available.

Far and away the leader among the species caught is hake, which is caught all year round and is sold for fresh consumption in the Argentine home market; for the Argentine fishing industry is still preponderantly a fresh-fish business. The Embassy estimates that about 45% of the total catch of fish and shellfish, including fresh-water fish, goes to the processing plants, including salting and drying as well as canning.

- The Argentine fishing fleet consists of about 300 coastal launches and 31 deep-sea vessels. At least two new trawlers have arrived in Mar del Plata, the first to be purchased under the Government's no-surcharge relief. The vessels, built in Denmark and purchased by a Mar del Plata cannery, are said to be equipped with modern electronic equipment and nylon nets. They are described as being steel hulls, 84′ long, with 350-hp engines. Judging by the Embassy reports these new boats, besides a few Japanese vessels working for the canneries, are the only ones in the Argentine fleet with modern equipment aboard.

Argentina Fish Exports

1959

Destination	*Pounds*
United States	
Shellfish	435,415
Frozen fish	29,526
Canned Fish	
South Africa	32,368
Bolivia	31,189
Cuba	97,574
Paraguay	3,566
Peru	1,683
Philippines	512
Total	631,833

Argentina Imports of Fish Products

1959

Product	*Pounds*
Cured Herring	58,509
Caviar	286
Sardines	10,283
Other canned fish	15,351
Total	84,429

By far the leading fishing port of the Argentine Republic is Mar del Plata, just south of the easternmost point of the bulge below the estuary of the Plata River. Practically all deep-sea fish caught by the Argentine fleet is delivered at Mar del Plata, plus about half the coastal fish and shellfish. But the offshore fishing grounds extend almost to the very tip of the continent, the port of Ushuaia, in the Territory of Tierra del Fuego, having landed 60 metric tons of fish last year to earn sixth place among Argentina's 16 fishing ports.

- Argentina has a shrimp fishery of sorts, but here again production is hampered by lack of adequately equipped boats. Red shrimp, the only variety exported, is caught mainly off the mouth of the Chubut River near Rawson, southern Argentina, about Lat. 43 S., in the summer months of October to January; but the fleet is not equipped to go out to sea after shrimp at other times of the year.

Exports in 1959 were 'way off the 1958 figure, because of falling prices in the U. S. and rising prices in Argentina, which kept the shrimp at home in the profitable national market. There are four shrimp plants in Argentina, the biggest with freezing capacity of 1,000,000 lbs. a month. Shrimp are also canned, along with other marine products, but no canned shrimp is exported, and no shrimp are breaded in Argentina. Prices in 1958 and 1959 were around 55¢ a lb. f.o.b. Buenos Aires for 21-35 size.

- The fish meal industry in Argentina is handicapped, processors say, by the high price of fish, which forces the processors to use cannery waste, with the result that meal plants are seldom operating at capacity. A new meal plant was installed last year at Puerto Deseado, in southern Argentina, but it was reported that the management was having a hard time persuading fishermen to move to Puerto Deseado, which in Spanish means "Port Desired." Apparently the fishermen are not finding it so.

- Last year, fresh-frozen fish was sold for the first time in the markets of Buenos Aires, and the public seemed to take to it reasonably well, considering the limited enthusiasm for fish felt by beef-conscious Argentines. As usual in the beginning stages of any frozen-food operation, the big handicap is shortage of frozen display space in the Argentine markets.

Argentina Fish Catch

(In metric tons)

Variety	**1958**	**1959**
Hake	22,976	33,928
Sardine	10,187	10,432
Mackerel	12,689	10,379
Shark	3,967	3,158
Weakfish	4,846	2,330
Sea Bream	1,650	1,642
Total Fish	**67,561**	**72,284**
Mussel	2,044	3,037
Red Shrimp	1,084	580
Other shrimp	261	293
Other	705	556
Total shellfish	**4,094**	**4,467**
GRAND TOTAL	**71,655**	**76,751**

- The fishermen of Mar del Plata are the only fishing group in Latin America exercising effective voluntary control over production and supply of fish. Buyers each day are required to present their orders for the following day to the fishermen's co-operative, and the total amount is then assigned to the various fishermen, who go out and try to land enough fish to fill the requirements.

Fishermen claim that since there are no refrigerated warehousing facilities at Mar del Plata, they must limit production or else dump their daily surplus back in the water. Canners, on the other hand, claim the fishermen use the voluntary-control method to keep the price of fish artificially high. For this reason, the canners led the push to lift the import surcharges on new boats. The fishermen opposed this relief as long as it was confined to new boats, on the ground that the canners were the only ones who could afford to buy new vessels, and would use the relief and their purchasing power to bring in new, big boats and break the fishermen. As a consequence, the Government, as this is written, is considering extending the import relief to used vessels as well as new.

While this tug-of-war goes on between the canners and the fishermen, the two groups agree on many other points. They agree that the big needs are modern fishing vessels, modern port facilities and modern transportation and marketing; and hardly less pressing is the need for scientific research.

Special acknowledgment is made to the *Camara Marplatense de Industriales del Pescado*, Mar del Plata, Argentine Republic, and to the US Embassy in Buenos Aires, for their co-operation in furnishing statistics and commentary used in this report.

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HONG KONG

● Hong Kong is basically a trader—an exporter and importer—of fishery products; but it is also a producer, catching half its requirements of fish and exporting from its own catch better than a third of its foreign shipments of fish, shellfish and their products.

Most of its requirements are met by imports; and much more than half of its total foreign shipments are in fact re-exports of goods which have moved into the Crown Colony, mostly from Communist China.

The Colony was about 55% self-sufficient in fish landings in the latest year for which statistics are available. Its fresh fish requirements are filled very largely from its own boats, but in the important field of dried and salted ocean fish—and particularly in the important freshwater fish category—heavy reliance is placed on imports. Thus the Colony produces only 12% of its dried and salt fish requirements and only 3% of its freshwater fish consumption.

Sale of aquatic products by Communist China to the Crown Colony, whether for consumption or re-export, amounts to about US$ 11 million annually. While Hong Kong would like to increase its share of its own fish business, it is not realistic to expect that it will undertake to do so to the detriment of its gigantic neighbor's sales.

● Alternative course obviously is for the Hong Kong government to seek means of increasing the Colony's operations in direct-export fish and fish products—particularly the latter, with their increase in value as result of manufacture.

Apparently the most attractive means of accomplishing this is through up-grading the fishermen's lot by reducing cost of catching and delivering, by raising the profit through reduction of the drain for debt, and by improving the effectiveness of the Hong Kong fishing fleet.

One important step on this course has been the establishment of the Fish Marketing Organization, through which all fish must be sold save for the actual alive and swimming fish esteemed in some oriental markets, and also by the aquarium trade.

With adequate freezing and storage facilities already provided, it is anticipated that technical development in the fisheries will be largely directed to the development of frozen fish and products for the export trade.

● Sweeping change occurred in the Hong Kong trade about the middle of 1959 when the United States suspended importation from Hong Kong of frozen shrimp and prawns because

HONG KONG FISH EXPORTS 1959

(Crown Colony product only. Values in Hong Kong Dollars)

PRODUCT	United States	Canada	Other America	Australia	Other Pacific	Asia	Other	TOTAL
Red Snapper, frozen	18,400	...	...	152,053	...	...	...	170,453
Other Marine fish, frozen	13,223	...	...	...	...	168,345	...	181,568
Freshwater fish, frozen	4,015	...	...	...	13,380	...	...	17,395
Aquarium fish, etc.	87,866	...	...	...	150,252	130,424	...	368,542
Shark fins, dried, etc.	112,213	...	...	...	29,264	124,788	...	266,265
Squid, etc., dried	517,505	...	...	...	466,913	527,804	...	1,512,222
Fish, salt, dried, misc.	1,260,694	323,202	...	...	1,193,734	127,553	...	2,905,183
Shrimp, frozen	2,097,069	315,898	...	...	700	...	...	2,413,667
Oysters, frozen	...	...	...	...	7,850	...	400	8,250
Shrimp, dried	17,089	...	810,084	...	49,387	...	...	876,560
Oysters, salted, smoked, etc.	708,735	40,906	21,618	...	23,232	7,356	...	801,847
Misc. Shellfish, cured	...	....	...	2,908	2,193	995	...	6,096
Misc. Shellfish, canned	...	...	...	...	16,400	...	14,024	30,424
Marine fish and products, canned	651,126	...	...	...	293,980	1,700	...	946,806
Freshwater fish and products, canned	425,717	...	...	48,013	114,398	1,575	...	589,703
Shellfish, preserved	...	...	...	...	...	...	4,200	4,200
Marine fish, preserved	5,525	408	...	499	...	...	...	6,432
TOTAL HONG KONG $	5,919,177	680,414	831,702	203,473	2,361,683	1,090,540	18,624	11,105,613
EQUIVALENT U.S. $	1,029,422	118,332	144,644	35,386	410,725	189,659	3,238	1,931,406

NOTE: Values of exports are shown in Hong Kong Dollars. Exchange rate for the period averaged HK$ 5.75 to U.S.$ 1. In short, to get value in U.S.$, divide any figure listed by 5.75. Data given here deals only with exports of fish originally landed in the Crown Colony. Imported products subsequently re-exported are not included. Such re-exported products greatly exceeded direct exports in value, in 1959 being valued at HK$ 21,487,736 -- equivalent to U.S.$ 3,736,997.

of the obvious inclusion in the Hong Kong shipments of these items imported from Communist China. Because of the apparent impossibility of the task of preventing the re-export of these goods other than by embargo, the U. S. authorities adopted that sweeping means of blocking the trade in interdicted shrimp. As result, the value of the Colony's export trade in "crustacea and molluscs" in 1959 fell to only ⅛th that of the preceding year.

- Hong Kong government's program for improving the economy of its fishing industry is geared to a 10-year period, within which attainment of the maximum potential for deep sea fishing is anticipated.

The program is being conducted on three main fronts: (1) modernization of the fishing vessels; (2) research and exploration of fishing areas within the range of the improved fleet; (3) adoption of improved fishing equipment and education of the fishermen in its use.

The government now has two exploratory and research vessels prospecting for fishing grounds, and studying improved means of developing those already under exploitation.

Scientific examination of the resources of the seas adjacent to the Colony is being conducted through research personnel of the University of Hong Kong. In addition to the biological problem and potential, the institution is also examining the economic and social aspects of the fishing industry.

Coordination of all fisheries research, technological, biological, economic and social in August, 1960, was placed in the hands of the government's Commissioner for Cooperative Development and Fisheries.

- Motorization of fishing craft is an enterprise on which the Crown Colony has made substantial progress, although as yet only 27% of the fleet, 2,747 out of 10,201 vessels, is motor-driven. In the past year the increase of motor craft was 381, more than four times the gain in the previous period.

Colony researchers in the technological field continually are seeking economically practical improvements by which Hong Kong fishermen can increase their catch and reduce their costs. For example, they are being urged strongly to replace their traditional ramie nets with Japanese nylon webbing, with its greater effectiveness and longer life. Mechanical means of hauling longlines are also being introduced; and the fishermen are receiving instruction in better ways of making better nets. They are slow to change from their traditional methods and materials.

- In the area of encouragement of foreign trade in fishery products the Hong Kong government mainly is concerned with providing certification procedures which will satisfy foreign governmental requirements as to the origin of the aquatic goods offered in international commerce.

HONDURAS

- Although the principal fishery of Honduras, shrimp suffered a setback in 1960, the potential for a prosperous shrimp industry is present in the waters of that republic. It is estimated that under normal conditions, Honduras could produce annually between 1,000,000 and 3,000,000 lbs. of headless shrimp, about half white and half pink varieties.

Honduras' exports of shrimp dropped sharply in 1959 under 1958, as is shown by the following table. And the 1960 catch, for which statistics are not available at this writing, was kept down by bad weather.

Honduras Exports of Shrimp

Year	Exported to	Quantity lbs.	Value U.S.$
1959	USA	399,000	225,000
	Panama	5,000	4,000
1958	USA	982,000	576,000
1957	USA	25,000	5,000

The drop in production and exports in 1959 under 1958 is blamed partly on what is called "restrictive legislaiton", which tends to discourage foreign vessels from fishing in Honduran waters, and partly on high costs.

In trying to shape a policy toward foreign development of their resources, many Latin American governments are caught on the horns of a dilemma: Whether to encourage foreign activity by reducing export taxes and minimum wages, lowering import duties on new equipment, etc. and thus attract foreigners, perhaps at the cost of "giving away" their natural resources; or to collect what they consider fair revenue in the form of export taxes, import duties and what they call fair minimum wages for native workers, and thus perhaps slow down the development of their resources, while getting a fair share of wealth from them.

There is something to be said on both sides. For example, while production costs for shrimp are said to be high in Honduras, native workers in one plant, according to official Honduran reports, are getting $1.50 per 12-hour day, which is about what their U. S. counterparts earn for one hour of the same kind of labor; and is still more than they could probably earn elsewhere.

Exports of fish from Honduras are nominal, 4,203 lbs. of fresh or frozen fish to the United States in 1959, value $2,818; and 41,735 lbs. of cured fish, valued at $6,324 to El Salvador.

Honduras in 1959 imported 959,190 lbs. of fishery products, including 623,593 lbs. of canned sardines from the U. S., approximately 72,000 lbs. of shrimp from El Salvador and approximately 40,000 lbs. of fresh and frozen shrimp from the same neighboring Republic.

- Late in 1960, Honduras had three freezing and processing plants for shrimp, all located on the Caribbean side, at Puerto Cortes, Caratasca and Guanaja Island. A freezer ship, which would have made a fourth freezer facility, unfortunately grounded and sank in 1959. Plans are reported afoot for improving the Guanaja plant and for establishing a new one either at Trujillo or at Cabo Camaron (Cape Shrimp).

Honduras began her 1960 shrimp season with a fleet of eight trawlers, all diesel powered and measuring 30 to 70 ft. Prospects for adding to the fleet, however, were dim because of the high production cost of shrimp.

British Honduras, which fronts on the Caribbean Sea, adjoins Mexico and Guatemala, and is claimed by Guatemala as part of its national territory, in 1959 exported nearly half a million pounds of fishery products, three quarters of which by weight and nine tenths by value, went to the U. S.

Of the British Honduras exports to the United States in 1959, totalling 265,090 lbs., valued at U. S.$ 151,775, spiny lobsters accounted for 315,010 lbs. and U. S.$ 142,111 in value.

PANAMA

● Next to bananas, shrimp is Panama's most valuable export, but in spite of bigger catches year after year the value of Panama's shrimp exports decreased in 1959 under 1958, and in 1958 under 1957, which was high year.

The reasons for this are mainly lower prices of shrimp in the U. S. (which takes virtually all of Panama's shrimp exports); and a larger proportion of the lower-price pink shrimp in the catch.

While the industry as a whole has been taking something of a beating economically, the fishermen within the industry have also suffered. Back in 1957 the shrimp business was so good that too many boats got into it. Although the white shrimp catch had begun to shrink in that year, the fleet continued to grow until it had reached some 220 boats in January 1959, according to a U. S. Bureau of Commercial Fisheries report issued last year. With so many boats in business, the catch per boat dropped far below the break-even point.

Facing 1961, the Panamanian shrimp industry looks more hopeful. Prices have risen somewhat in the U. S., and at the same time the Panamanian fleet has decreased to something approaching a sensible level, so that fishermen can make profitable per-boat catches. Some Panamanian shrimp vessels have gone to other countries, notably Colombia; some have even gone as far afield as the Persian Gulf. While the fleet was swollen to its greatest and least profitable size, there was some talk of legislation to control the growth trend, but now that the fleet is down to near 100 vessels, the need for such regulation seems to be disappearing.

Another source of fisheries revenue to the Republic of Panama is dwindling as the U. S. tuna fleet, fishing in Central and South American waters, converts from bait-boats to purse-seiners. In recent past years, Panama has collected about $100,000 per year from licenses granted mostly to U. S. bait-boats to catch anchoveta in Panamanian waters for tuna bait. But purse-seine vessels do not use bait, and as the number of bait-boats declines, the source of revenue is also dropping.

● Certainly the Government of Panama is not watching helplessly while the country's fisheries decline. The budget for the Department of Fisheries and Related Industries for 1960 was more than double the 1959 appropriation ($16,440 as against $7425, according to the Bureau of Commercial Fisheries report), and the fisheries administration was elevated from a Section to a full Department of Ministry of Agriculture. The National Laboratory of Fisheries, which will expend the bulk of the budget on resources, is a part of the Fisheries Department and is under the administration of Sr. Juan L. Obarrio.

In the National Laboratory, research is being carried on under Luitje K. Boerema, a Dutch fisheries expert sent to Panama by the UN, mainly on ways and means of increasing the proportion of white shrimp in the national catch.

Perhaps the most significant part of the Government's action in the fishing industry is that while the Fisheries Department's budget was increased, the Agriculture Department's allocation and, indeed, the entire national budget, was sharply cut.

An innovation in the tuna business off Panama, and one that is full of significance for the future of tuna handling, is the development of floating transshipment methods by National Marine Terminal Inc. of San Diego, California.

The Terminal management has devised procedures for synchronizing the arrivals of its big, ocean-going refrigerated freighters and its tuna fishing vessels at prearranged points and transshipping the fishing vessel's load to the freighter while both vessels are afloat in sheltered waters, but without benefit of docks or shore installations.

By this method, the shipper gets the benefit of the specialized use of a transport for transport only and of the fishing vessel for fishing only; and the fishing vessel remains on the fishing grounds where it belongs rather than acting as a transport over thousands of miles of water to the cannery in San Diego.

There are two fish meal plants in

Panama's Production of Fishery Products, 1956-59

	Quantity (000 lbs.)				Value (U. S. $000)			
Product	**1956**	**1957**	**1958**	**1959**	**1956**	**1957**	**1958**	**1959**
Total	**7,973**	**10,589**	**11,167**	**30,702**	**2,562**	**5,687**	**5,056**	**4,961**
Shrimp Lobster	6,645	9,268	10,071	12,234	2,503	5,465	4,936	4,737
Fish	1,315	1,319	1,090	18,466	58	222	120	223
Turtles Oysters Clams	12.8	1.8	4.8	2.8	1.0	.2	.4	.2

Data are for Gulf of Panama, source of almost all of Panama's fish products. Figures are rounded but not adjusted to add to total. Source: Panama Bureau of Statistics and Census.

Panama, one on Taboga Island and one at Caimito. In 1959 these plants produced about 2000 tons of meal of which they exported about 1400 tons. In spite of stiff import duties, Panama imported about 1700 tons of meal in 1959 when the domestic supply ran low for about five months, says the Bureau of Commercial Fisheries.

Fish oil is produced by simply pressing and settling. All of the oil produced is said to be consumed in Panama, mostly in making soap.

One remarkable effect of the fish meal business in Panama was to make the total catch of fish jump from 1,090,000 lbs. in 1958 to 18,466,000 lbs., according to a report prepared by the Bureau of Statistics and Census from various official Panamanian sources.

ICELAND

● Intensely concerned with the 1960 Geneva Conference on the Law of the Sea, Iceland moved immediately upon the conclusion of that meeting to consolidate and confirm its unilaterally-imposed 12-mile fishing limit around Iceland.

At the same time, the Icelandic government sought earnestly to reach a settlement of its controversy with British trawlers.

Late in the spring Iceland proclaimed amnesty for past violations of the 12-mile limit. This followed immediately upon British decision not to bring force in order to permit its vessels to fish within this zone. The Icelandic action had the effect of permitting foreign trawlers which might seek refuge in coastal waters under emergency conditions to do so without fear of arrest and detention for past offenses.

● Icelandic fishing during the first half of 1960 was excellent, continuing a trend manifest during the two preceding seasons.

The spring cod season was exceptionally good, although there was some difficulty in securing adequate supplies of ocean perch.

An interesting effect of the 12-mile limit on Icelandic territorial waters was the relatively poor fishing results experienced by the larger trawlers, while the smaller motor boats profited materially.

During the early part of 1960, 52% of the Icelandic catch was frozen, while salted and dried fish amounted to 39%.

There was a significant increase in the shipment of fresh fish on ice to England.

● So active did this trade become that in the fall of 1960 successful shipments of the higher priced varieties of Iceland fish were made to London by air. Fish such as plaice, lemon sole and small halibut were packed in plastic bags and, stowed in cold compartments of high flying airplanes, were delivered in London in 24 hours in perfect condition. Economics of the operation were considered quite encouraging, so long as air transport is reserved for the most costly varieties, and employed at times of scarcity and high price on the Billingsgate market.

Cost of delivering fish by air from Iceland to Great Britain in 7-ton lots was estimated at 8.4 U.S. cents per pound.

It is known that possibilities of making shipments of Iceland fish to the United States by air were examined carefully, but profit margins were not believed to be sufficiently large to encourage the enterprise at the present time.

● In sharp contrast with the favorable fishing during the first half of the year, Iceland's summer herring fishery was extremely disappointing. Nor was this due alone to the depressed condition of the fish meal market throughout the world. With a total quantity of 270,000 barrels of salt herring contracted, Iceland's summer herring operation ended late in August with a pack of only 226,400 barrels. Icelandic reports blamed a part at least of the disappointing herring results on the presence of more than 100 herring fishing vessels of Soviet Russia off the Iceland north coast, not far beyond the 12-mile fishing limit imposed by Iceland.

In keeping with almost all fish meal manufacturing countries throughout the world, Iceland suffered in 1960 as result of the extremely low figures available on world markets for this protein supplement. At the start of the season the Iceland price for herring for reduction purposes was approximately U.S. dollars 35 per short ton, approximately 10% under the 1959 price. This reduction was a restrained concession in recognition realistically of the decline of from 35 to 40% in herring meal prices as contrasted with the previous year. It was calculated that the decline in world prices for fish meal and oil would be equivalent to an 8% reduction in Iceland's normal earnings from its total export trade.

Icelandic sardine canning in the autumn of 1960 showed encouraging signs of growth with some increase in canning capacity and announcement that Czechoslovakia had contracted for a substantial quantity of Icelandic sardines, approximately one million cans.

UNITED KINGDOM

By HAROLD SIDWELL

• Markets for fish products in the United Kingdom during 1960 may be reported upon thus:

Canned Salmon

During the year the tremendous buying in 1959 began to show up and with advancing prices to the public. sales became gradually more difficult and it was evident that so far as Reds were concerned, on the nationally advertised and well-established brands commanded respect in the trade, and appealed to the public. Packers' labels, and many wholesalers' own house labels, were not in favour, with the result that for the first time many substantial parcels of Red salmon halves under packers' labels were, and still are, offering on the market at cost. This would seem to be the pattern for future sales of Red salmon.

Medium Reds found a ready sale, both halves and quarters, in the early part of the year but, again with the exception of the known and advertised brands, sales have dropped off and probably the same trend will continue in future, sales being restricted to the known brands.

Substantial quantities of Japanese Pink halves and Chum halves arrived early in the year and the markets on both grades took a most disastrous drop, holders losing at least 10/— per case below their c.i.f. purchase price to make sales. This, in my view, was primarily due to the fact that the Chum halves were treated as a "draw" line in the chain stores, and the public at large still being unaware of the difference between Chums and Pinks took up the Chums and left the Pinks. However, on the news of the shortage of new pack on the Pacific Coast, and particularly from Japan, the market has in the last few weeks taken a strong turn upwards and new pack Pink halves have been sold at 88/9d. per carton c.i.f. to a market which a month ago was selling Pink halves on the spot at 76/- l.d.p. ex store. It is now known that practically no Chums at all will come to England, thus protecting the Pink market which should go stronger from now until supplies of 1961 pack arrive in October, 1961.

One can deduce that if the Japanese continued to sell substantial quantities of Chums here, they would lose the benefit of both worlds, ruining their Pink market for the sake of the cheap Chum sales. I would hazard a guess that in future the Japanese may well reconsider shipping Chums here again, and may concentrate on establishing a solid market for Pink halves.

Going into the New Year, there are ample stocks of Red halves and, in fact, for the first time, the last allocation in September made by Japan was not fully taken up. Buyers are naturally concerned with the promised substantial run on the Fraser in 1961 and the general feeling is that they should be as light of stocks on Red as possible by April 1961. Certainly there will be no rushing in to buy next season's pack.

By and large I would say that the pipelines are filled and there is ample Red salmon to cover requirements at least for the first six months of 1961.

Imports during 1960 from Canada were less than 1/3 of 1959 and the Japanese are down by 40%. On the other hand, imports from the United States and Russia more than doubled on 1959, but these two countries be-

Canned Fish Imports Into U. K.

SALMON	**1959 Jan./Aug.**	**1960 Jan./Aug.**
Canada	706,000	214,000
Japan	2,063,000	1,203,000
Russia	123,000	285,000
U.S.A.	90,000	185,000
	2,983,000	1,887,000
CRAB		
Japan	110,000	63,000
Norway	11,000	12,000
Russia	18,000	27,000
	139,000	102,000
TUNA		
Japan	14,000	12,000
South America	94,000	102,000
	108,000	114,000
PILCHARDS		
S. & S. W. Africa	584,000	869,000

All figures refer to cases of 48/8-oz. or 24/16-oz.

Figures prepared by the Market Research Statistical Department of Brian Jenks & Co., Ltd., 26 Cowcross Street, London, E.C.1., as quoted in "The Grocer."

• **Mr. Sidwell** is head of Sidwell & Co., Ltd., London, with branches elsewhere in England, as well as in Norway and Japan. He is widely known personally throughout the principal canned and frozen fish producing areas of the world, and particularly in Canada and the United States. As a young man he spent several years in those countries in the employ of leading packers, learning the producing end of the business whose goods he now markets broadly in Britain.

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UNITED KINGDOM

tween them only account for 25% of the total. Overall the imports of Canned Salmon were down from nearly 3,000,000 cases to 1,900,000.

Canned Tuna

● There was some revival in the imports of tuna from Peru and Japan, probably due to the fact that the demand for canned salmon has been saturated and the public were prepared to look for other varieties of canned fish. The Japanese supply was short and advancing prices against limited import licences led to a return of interest to the Peruvian. It would seem that tuna has now definitely established itself on its own merits in the United Kingdom and sales should increase annually. Forward prices for Peruvian 48/½'s of tuna are quoted at 53/- c.i.f. for shipment December/January, and 96/¼'s at 65/- c.i.f.

Canned Pilchards

● Imports from South Africa remained fairly stable, but the business, which is extremely finely cut, is gradually narrowing down to three or four of the well-established brands only. A television campaign by one of the larger producers has certainly stepped up the sales of their particular brand. Imports from Japan are nominal, the prices not being competitive with the South African. Attempts are now being made by the Japanese to re-establish the traditional market in 1-lb. oval and half ovals, which should be the natural way of packing fish of this type.

Crab

● Whenever allocations of Japanese and Russian King crab have been made, they have been readily taken up by the trade despite a continued advance in price, and it would seem that for King crab, supplies of which are shortening each year, this market is prepared to pay the asking prices. Kenagi crab has its regular market but, with the advancing prices on Hanasaki and Zuwai for the cheaper trade, this business has been dwindling.

Frozen Salmon

● The early part of this year saw the "exposure" on spot of some hundreds of tons of "hidden stock" of small frozen dressed headless Chums running 3 to 4 lbs. which were knocked down to extremely low prices and affected the general levels through March till July, offering at about 3/- per lb. to the trade. New pack floating Chums were shipped from Japan and arrived August/September and were out at 4/- per lb.

Due to the shortage of sizable salmon throughout the world, the Smokers stepped in and ran the prices for larger Japanese Chums running 8 to 14-lbs. up to as high as 5/6d. per lb. c.i.f. thereby creating a false impression of the strength of the Frozen Salmon market. The Smokers have now covered their requirements for probably 5/6 months ahead, which will eliminate the paying of high prices and frozen salmon can now only be sold through the normal fish trade channels, the levels of which are considerably lower.

With the freeing of Canadian salmon, comparatively small shipments of Johnstone Strait Silverbrights and other Chums were sent to this country, but had no bearing on the market as such. Forward contracts have been entered into with Japan for December/January shipment, which will probably keep the market at around 4/- to 4/3d. per lb. for 3 to 6-lb. fish dressed headless, and therefore the interest for Canadian and/or American Chums will only be at around 55c per lb. c.i.f. for the selected Silverbrights. There are practically no Silvers or Kings from Japan and the same, of course, applies to the Pacific Coast where such offers as have been made are based on 78c per lb. f.o.b. and out of line with the sales possibilities. Whilst supplies are not long, I would judge that there is enough frozen salmon on contract booked to carry the market through until after Easter.

Frozen Atlantic Salmon

● For the first time since before the war, frozen salmon from the North American Atlantic Coast was free to import into England and here the London Smokers took control. They were so short of sizable fish from Scotland, Ireland and Norway that they forced the prices up for fish 8-lb. and over, dressed headless, to fantastic heights, paying up as high as $1.25 per lb. c.i.f. for fish running 14-lb. and over, and took delivery of everything they could lay their hands on. This put a false impression on the market and led to the excessive prices for the medium and small fish which it has since been found have almost been impossible to sell in England, except at severe losses.

Another factor is that without having seen this fish for some 20 years, the same prices were paid for salmon from all areas, some of which have now been found to be unsuitable for smoking on colour and degrees of firmness. A number of these parcels are being hawked around the London market. I would hazard a guess that approximately ½-million pounds Atlantic salmon of all sizes was imported during July, August and September.

Frozen Halibut

● Until the recent freeing of halibut from Canada and America, imports have primarily come from Norway, and the buying prices, which were weak until August, have recently taken a turn upwards. Through 1959 the problem with Norwegian/Greenland/Newfoundland halibut was that of greys, of which buyers were forced to take over 50%. These were most difficult to sell and inevitably had to be sacrificed at a loss. During 1960 the Norwegians had found markets for the greys, and also trimmed their halibut similar to the Pacific. With the elimination of this waste and a general tightening up of their packing and presentation, the pack offered to England of some 700-tons was readily taken up at around 27½c to 29½ per lb. c.i.f.

Although the inherent quality of the Atlantic halibut is superior to the Pacific, nevertheless considerable efforts have been made to re-introduce the Pacific halibut, and very satisfactory results have followed. The promise for the future is good and, provided prices do not advance, a most encouraging picture can be faced for future development and expansion of this business. Since the freeing of Canadian and American halibut for imports into the United Kingdom, sales have probably reached very nearly 1,000,000-lbs. the emphasis being primarily on 10 to 20's, with 20 to 40's following, and Chix in third position. Prices ranged around 27½ cents Chix, 29½-cents Medium 10 to 20, 20 to 40's, per lb. c.i.f. for Canadian, with a firming tendency noted now. Some American halibut has been brought in, but the duty of 10% ad valorem has a restricting influence. If, however, the Canadian prices should advance very much above their present levels, there might well be an opportunity for American halibut to be sold here for late winter shipment.

There is some nervousness on behalf of importers as to the trend of the dollar as if it should weaken considerably, of course, this would reduce the Sterling equivalent and then much more substantial business would follow.

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DENMARK

- Tendency toward decline, both in quantity and price, was noted in the Danish fishing industry through the first three-quarters of 1960, particularly in the "industrial" fishing or fish reduction industry.

Foodfish shipments in many categories showed a tendency to rise, although shipments of cultivated Rainbow trout and of frozen fish fillets to the United States declined appreciably.

Herring meal exports dropped from 41,000 metric tons during January-August, 1959, to only 18,000 tons in the first eight months of 1960; the decline in value was even greater, from 52 to 17 million kroner (US$7.5 to $2.5 million). Exports of fish oils were halved.

Meanwhile the Danes maintain that the depletion of North sea herring results not from Danish overfishing but rather from English activity on the breeding grounds in the English channel. A Soviet herring fleet was active near the Faroes in late 1960, but Soviet requests for reloading rights in the Faroes have been refused.

Shipments of most varieties of food fish showed a general increase with the January-August totals rising from a value of 182 million kroner (US $26.4 million) in 1959 to 199 million kroner (US$28.9 million) in 1960. On the other hand, sales to the United States of both rainbow trout and frozen fish fillets dropped appreciably.

More than 500 fishing craft were idled by a strike and consequent lockout of fishermen at the important west coast port of Esbjerg from August 22 to September 15. Under terms of the strike-ending agreement, crew members will receive an increased portion of a vessel's catch. Estimates of the value of the lost catch run up to ten million kroner (US$1.5 million).

The effect of European market formations on Danish fisheries was discussed at the Nordic fisheries Conference in Karlskrona, Sweden. Denmark can expect an increased import of canned fish, the only fish item on which a Danish duty is imposed at present.

- Development of the coastal fisheries of Greenland by the Greenlanders themselves, through the use of larger fishing boats and trawlers than they possess at present, is one of the primary enterprises for fisheries expansion projected by the Danish government.

The director of Royal Danish Greenland Trade in 1960 reported that only through the development of expanded processing facilities could the Greenlanders themselves benefit economically from any extension of territorial waters, since they lacked vessels large enough to exploit the more distant seas of their arctic coast.

Furthermore, the cod, which is the principal commercial fish of Greenland, appears periodically to leave the coastal waters for the offshore banks, it is feared that without larger vessels to fish the banks the Greenland fishery itself cannot attain industrial stability.

As it was reported in 1960, only about 10% of the current catch from Greenland waters is taken by residents of the gigantic island, while in 1960 no fishing vessels based in Denmark proper were active in the Greenland fishery, although vessels from the Faroe Islands are active participants in the Greenland operations.

- An interesting development in the Greenland fishing industry in 1960 was the establishment of a shrimp cannery at Christianshaab, and its equipment with shrimp peeling machines manufactured by The Peelers Company, of New Orleans, La.

Shrimp peeling machines manufactured by this company were exhibited in the World Fisheries Fair in Copenhagen, Denmark, in the fall of 1959, where they attracted wide attention, and it is anticipated that mechanical peeling may make some headway in the shrimp fisheries of Scandinavia.

The Danish rainbow trout industry suffered during 1960 from the lack of stability in markets, which was so disturbing that the Association of Trout Producers was disbanded.

Danish frozen trout sales in the United States have suffered recently as result of competition from Japan.

- In common with most European countries, Denmark suffered in its fish meal and oil manufacturing industry from the low world prices for fish meal.

Although many of the vessels formerly fishing for reduction were able to turn to food fish operations, the landed volume of fish declined sharply during the first half of 1960.

Depressed markets for reduction products led to the chartering of a number of large modern Danish fishing vessels to other countries.

A critical situation developed in the Danish fisheries in the fall of 1960 when more than 500 vessels in the Danish West Jutland fishing port of Espjerg were idle as result of a controversy between the crews of the vessels and the owners over division of profits.

Originating in the herring fleet, the controversy quickly spread throughout the entire fleet when the vessel owners refused to accede to the union demand that crew members share in the annual profits of the vessel. Under current practice the crew has shared in the sale of each trip but not in the annual earnings of the vessel, which have been divided between the owners and masters.

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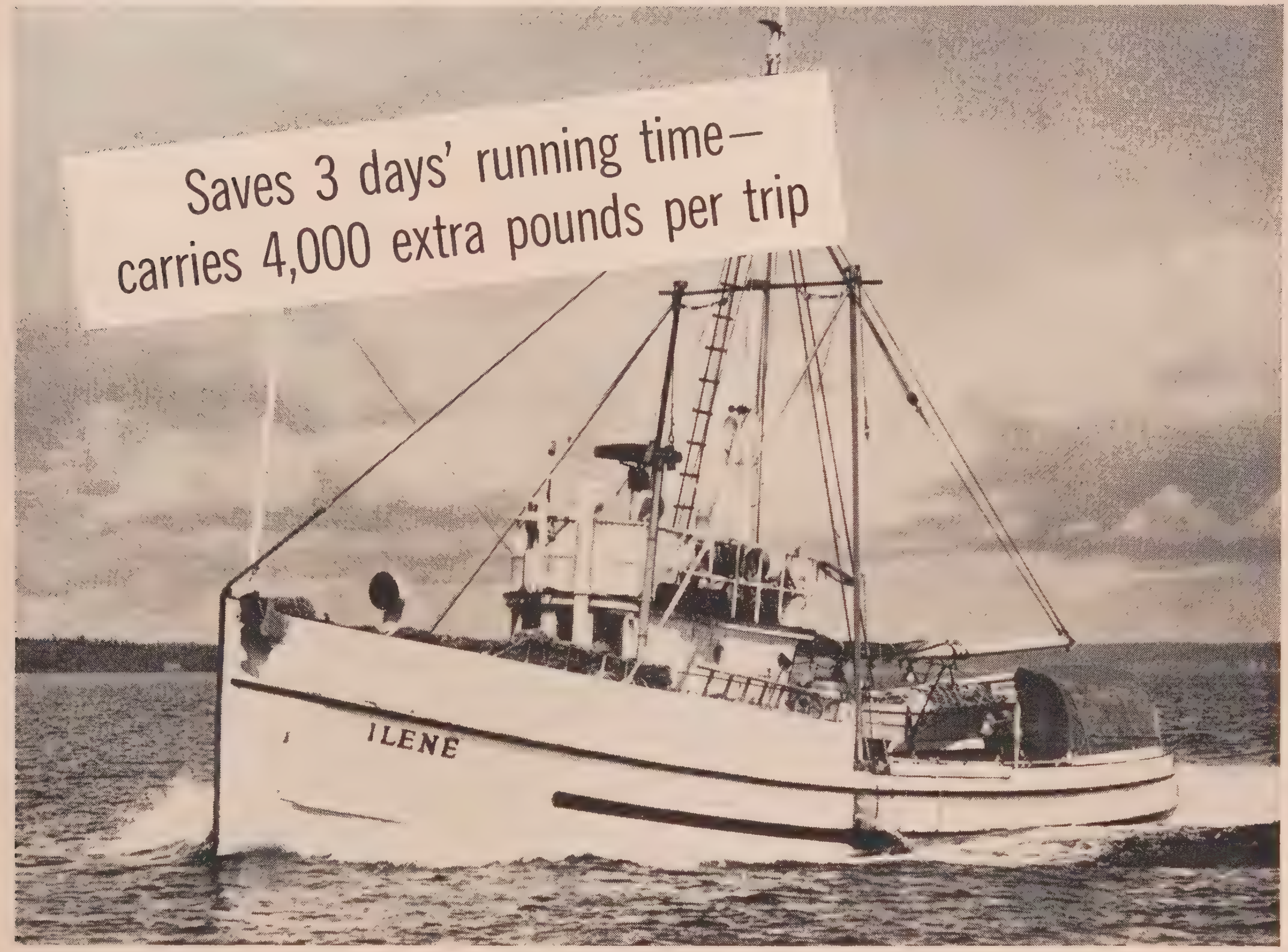
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He also reports his repowered halibut fisherman takes in about $4,000 more per season, carried an extra 20,000 pounds of fish last year, lost a lot less catch-weight because of the faster speed it has now.

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By BORIS G. KULIKOV

- The Seven-Year-Plan forms the basis of the development of the economics in our country. In accordance with this plan our fishing industry is supposed to attain by 1965 the target figure of 4.6 million metric tons of fish and other sea animals against the total catch of 3.3 million metric tons planned for 1960. That means that the annual increment should exceed 200 thousand metric tons.

This can be achieved though (1) the expansion of sea fisheries on the one hand, which is closely connected with the realization of research programs, (2) construction of new and modernization of old fishing vessels, and (3) through rebuilding of fish stocks in our inland seas and (4) the development of fish-rearing in natural and artificial reservoirs, on the other.

- In developing our sea fisheries we should bear in mind both the interests of our country and the necessity of maintaining the rational utilization of marine resources with due consideration of the interests of other countries concerned.

Our fishing industry people have no idea of developing sea fisheries other than in close co-operation with other countries in the field of rational exploitation of marine resources, such co-operation being duly based on the respect for each other's rights and interests.

NOTE — Accompanying article by Mr. Kulikov was presented by him as an address before the International North Pacific Fisheries Commission in Vancouver, B. C., in November, 1960. Mr. Kulikov is chief of the International Fisheries Division of the State Planning Committee of the Union of Soviet Socialist Republics.

Boris G. Kulikov

Successful expansion of sea fisheries requires much care about the future of the resources in the ocean. The more developed the means of production, the higher is the rate of exploitation of natural resources and, consequently, the more attention should be devoted to the reproduction aspect.

- Our fishery scientists and research institutions tried to acclimatize Pacific salmon in the Southern Barents Sea as far back as in the thirties. Due to different reasons, some of them beyond our control, those experiments were not quite successful.

In 1956 the experiments were resumed and they have been continued ever since in accordance with fish-rearing programs. Two main salmon species—Pink and Chum (Oncorhynchus gorbuscha, O. keta)—were chosen by our scientists as an object of acclimatization simply because of their earlier descent to sea which almost excludes the problem of food competition between them and Atlantic salmon; as regards the food supply during the sea-life period of transplanted salmon, the availability of food is beyond any doubt.

Nature has responded to this scientific effort in a very generous way. In the second half of 1960 more than 100 thousand specimens of Pink salmon at the age of 1 were registered in the trap nets off the Kola Peninsula, their size ranging from 46 to 52 cm and weight amounting to 1.5 kg. It is noteworthy that the fish entered many more rivers other than those into which they had been released. For example, Pink runs were observed in the rivers of the Arkhangelsk area. In northern Norway they constituted about 2 per cent of the total salmon catch in 1960. According to unofficial reports, young Pinks were also observed this year in the rivers of Iceland and Scotland. So you see that the northern Pinks have shown a very sociable character and a great interest for travel.

- The task of acclimatization of Pacific salmon could not be fulfilled with any markable success without finding the adequate technique of transporting the eggs from the Far East to the Barents Sea area. The methods applied permitted decrease in the percentage of eggs lost during travel to 0.5 per cent for Chum and 1.8 per cent for Pink salmon. New hatcheries were built and a number of old ones reconstructed; rearing technique also underwent some modification.

While in 1957-58 salmon were released under ice in the rivers Kola and Umba of the Kola Peninsula,

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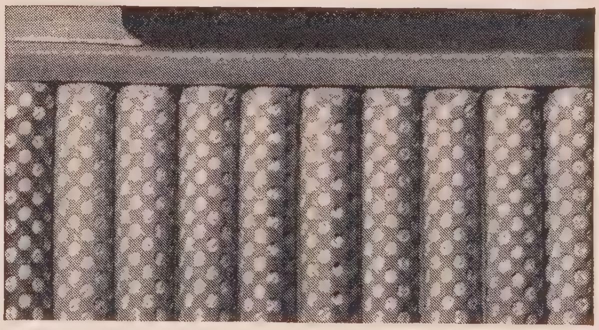

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mainly in the stage of larvae with yolk sac not completely absorbed, in 1959 all the young were released from hatcheries only after they had attained the weight of 200 to 1000 mgs. with the yolk sac completely dissolved. The young were released into the rivers Kola and Ura in the north and rivers Umba and Niva in the south, and the latter two rivers flow into the White Sea.

The young fish were reared in the same ponds they had been placed in after hatching with an average number of 25,000 fish per one square metre.

The young were fed by the eggs of cod, herring and other different species of fish, red-fish larvae, minced frozen capelin, liver, etc.

The approaches of Pink runs to the European coast in 1960 have fully justified the line taken by the scientists in their experimental work.

● No reports were received on the approaches of Chum, as yet. However, since the young of Chum were released for the first time in 1959, we may not expect them back in our northern rivers before 1962-64, that is when they grow up to 3+ to 5+, provided they retain the length of their sea-life period.

The results achieved so far have, in our opinion, been quite satisfactory. Now we are confronted with two major problems first of all, will the Pink salmon produce the next generation under natural conditions of the Barents Sea, and what European rivers will they find most suitable for spawning; secondly, how to safeguard the stocks and not to make them vulnerable to intensive fishing at this early stage of their formation. At present commercial catching of Pink salmon is allowed neither in our rivers nor in the open sea.

We believe that before definite conclusions are made much more research is required at this stage. We hope that the scientists of the countries whose rivers were approached by salmon this summer will help us by reporting the results of their observations. We are inclined to think that the problem of the acclimatization of Far Eastern salmon in the Barents Sea is already now outgrowing the national interests and becoming a matter of international importance.

● We hope to be understood correctly if we say that the experiments of acclimatization of salmon in the north were not being undertaken for the sole purpose of making up for the losses in the Far East. These experiments were conducted with a view to increasing the marine resources in accordance with the main principle of our planned economy. The problem of salmon stocks in the northwest Pacific still retains its urgent character. If you look at the matter from the viewpoint of the situation during the last 20 years you will see that the catches of salmon since the last richest odd year of 1949, when 263 thousand metric tons were taken, have been gradually decreasing and amounted to only 94,000 metric tons in 1959. A similar picture is observed as regards the catches in even years. Against 177,000 metric tons produced by the richest year of 1944 and a good catch of 160,000 metric tons in 1956, the 1958 catch decreased to 73,000 metric tons.

The present year has not brought any consolation either. Judging from the preliminary results, our salmon fishing in the area is unlikely to reach the catch figure planned for 1960, nor shall we reach the level of the actual catch in 1958. The decrease in the run of pink salmon predicted by our scientists is quite noticeable this year. This makes us feel growing concern over the future of this valuable species in the northwest Pacific.

● Salmon constitutes an important item on the list of national resources of our country. On the state of salmon stocks depends something more than the well-being of the people engaged in salmon fisheries. So our interest in the way the other countries try to tackle and solve the problem of rational conduct of salmon fisheries should be quite understandable.

The Soviet fishing industry is interested in the development and exploitation of all marine resources of the North Pacific. In the course of the recent research great concentrations of flat fish were found in the area. They now compose the dominant part in our catches, their monthly totals averaging 10-11 thousand metric tons. Cod fishing is also likely to be expanded. Newly developed techniques of processing have stimulated the production of canned saury.

As to the Soviet crab fishing effort in 1960 we did not reach the crabs-per-net figures attained by Tokei-maru as shown in the documents of this session. Our crab fishing is likely to continue on the same scale next year in the waters adjacent to Bristol Bay.

We do not specially fish for halibut in this area and halibut occurs in our catches only as individual specimens and serves as a sort of bonus for fishermen. It is hard, therefore, to calculate exactly how many specimens are caught in the trawl nets of our fishermen. I shall make no attempt, however, to hide our growing interest in this particular fish, or to rule out the possibility of starting experimental fishing for halibut in the near future for exploring the existing situation.

The Soviet fishing industry is certainly interested in the expansion of fishing in the Pacific Ocean. We cannot separate our interests, however, from those of other countries and are always ready to co-operate.

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INDIA

● Export fishery development of India over the foreseeable future rests in large measure on the degree of development achieved by the shrimp fishery, and to extent to which its products meet the quality specifications of exacting export markets.

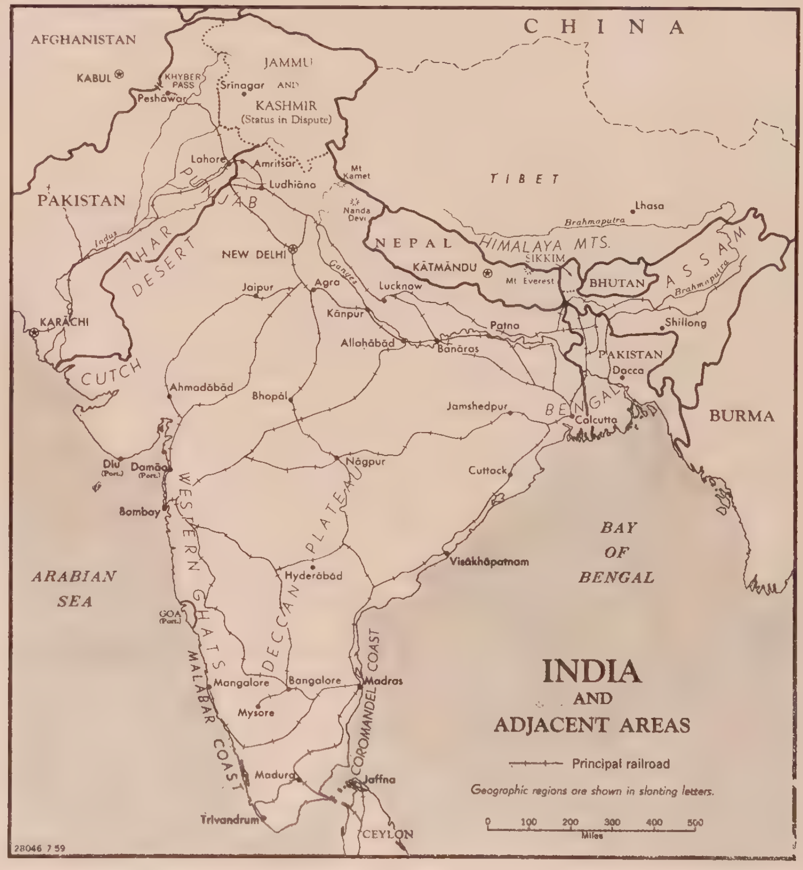
India's production of fish on the basis of gross tonnage is believed to approximate 1 million tons annually, of which a large part is consumed domestically, while perhaps 75% of the export business is in dried or salt-cured fish for shipment to neighboring countries in southeast Asia or around the Indian Ocean basin.

Of the Indian fish production approximately 800,000 tons are of marine origin, while inland waters, including fish cultural operations and subsistence fishing, are credited with as much as 300,000 tons.

About 75% of the marine fish catch is made from the waters of the west coast of India; and generally from waters within 10 miles of the coast. This relatively narrow belt of fishery apparently derives from the character of the vessels engaged rather than from any close concentration of fish along the coast. While it is true that the fish exploited at present are most abundant alongshore, experience indicates that extension of fishing operations further to sea would be profitably productive.

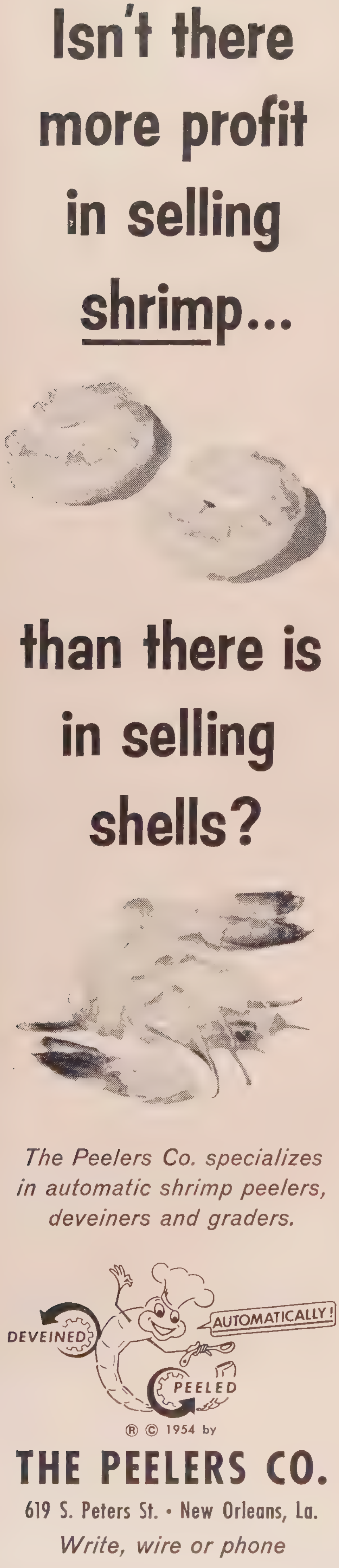
India has a target of 2 million tons of fish annually in the life of its Second and Third Five-Year Plans, and it appears with this doubling of production will come in large measure from fisheries lying seaward of waters exploited at present.

This will require new vessels, of larger size, increased capacity, greater power, broader capabilities and — *above all*—refrigeration facilities adequate for full protection of quality under tropical conditions.



● Prawns, which include shrimp and related crustaceans such as spiny lobsters, at present account for about 15% of the Indian fish production on the basis of tonnage. Percentage of value is of course much larger, as many of the fish taken are of low-value varieties; while the value potential of the shrimp catch could be enormously increased, even on the basis of present tonnage, by more adequate refrigeration and handling, packing and distributing methods designed to meet the exacting quality specifications of the most profitable markets.

Indian prawns are accorded high standing on the basis of flavor and other quality characteristics. Hitherto a very large percentage of the catch of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prawns has been sun dried on the beaches; or in some case boiled briefly in salted water and then dried. While these methods yield a product which has enjoyed good demand in southeast Asia, recent developments have shown increased profitability through freezing the catch for the United States market.

In recent years this trade has grown steadily, in pace with improvement in handling aboard the fishing boats and the development of modern freezing plant, storage and distribution facilities ashore. That it could be much further expanded, and to limits not yet envisioned, is the opinion of American shrimp marketing specialists who have studied the product and the problem.

● Refrigeration is the key to the future of the Indian fisheries in export earnings. This is of course particularly true in the attractive area of shrimp freezing, and scarcely less so into shrimp canning, where the potential is only a little less attractive than in freezing.

Apparently in the belief — well-founded—that canning can go along with freezing in fullest utilization of the shrimp resource, the Indian Central Food Technological Research Institute, Mysore, is giving close attention to the requirements of successful canning.

Beside the advantage of utilizing shrimp whose size or condition detracts from their value frozen, the shrimp canneries on the west coast of India are expected to include in their product mix such canned items as mackerel, sardines and pomfret.

Recognizing that exacting quality specifications will have to be met by Indian products in some of the most profitable markets, and particularly in the case of frozen shrimp, Analytical Laboratories of the Indian Ministry of Food and Agriculture are said to be in process of organization for the purpose of providing government quality certification for exports.

● Indian government policy appears to encourage foreign collaboration in development of the fishery resources, and particularly in the field of increasing the capability of the fishing fleet.

Closely briefed, some of the conditions for such participation by foreign capital are:

Majority Indian capital participation; vessels to be of Indian registry; vessels not to be equipped with recording instrumentation; vessels to be manned by Indian officers and crew; vessels not to exploit pearl oysters or other sedentary fisheries; vessels to provide facilities for the accommodation aboard of one government officer for each craft; "every attempt should be made to bestow individual attention on the training of Indian personnel to ensure that they receive training in technology and processing and become duly qualified to operate the vessels ultimately to replace the foreigners."

In-shore fisheries are reserved to small craft of less than 12 registered tons, as are a number of large gulfs and bays. Small vessels operating in inshore waters "should be manned, as far as possible entirely by Indian crew."

An interesting provision of the requirements for foreign capital's participation in the Indian fisheries is that any company in which there is foreign investment "will be governed by the export policy, as it is applicable to the fishing trade, as laid down by the Government of India from time to time."

● Significant example of the type of facilities expected to contribute importantly to the development of the Indian fisheries in the cold storage plant opened late in 1960 at Versova, about 15 miles north of Bombay. The plant was built with United States Technical Cooperation Mission assistance for the Versova Fishermen Multipurpose Cooperative Society Limited. The building itself cost US $31,500 and was built by the cooperative with its own funds. Equipment to the amount of US $31,080 was provided by the Technical Cooperation Mission.

The plant can store 30 tons of frozen fish, an equal amount of ice, and can manufacture 11 tons of ice daily.

Benefit to fishermen will derive alike from the fish freezing facilities and the availability of ice at reasonable prices and in assured supply.

Members of the cooperative operate 450 fishing vessels and 250 small craft. About 150 of the larger boats are equipped with diesel engines, of which about one-third were supplied by the U. S. TCM.

A large part of the fish handled by the cooperative are distributed in the Bombay area market, but the freezing facilities are expected to contribute importantly to the regional economy by providing facilities for packing frozen shrimp for shipment to the United States market.

WEST GERMANY

- World-wide impact of the explosive production of the Peruvian fish meal manufacturing industry is particularly evident in West Germany, where the domestic fish reduction industry suffered sharply in reduced prices, while the great agricultural interests benefitted richly, claiming an annual saving of DM 120 million (US$ 28,560,000) as result of the decline in prices following Peru's attainment of top place in world production of this protein concentrate.

Late in 1960 importation of fish meal into the German Federal Republic—one of the world's most important markets for this commodity—was entirely liberalized. This condition was being combatted vigorously by the domestic fish reduction industry, but without apparent effect.

In 1960 the West German reduction industry was said to have leveled a series of charges against Peruvian fish meal quality and marketing methods, but without producing protective action on the part of the government. Efforts were also made to put Peruvian imports under permit or tariff, but both of these proposals were rejected by the German Federal government, with the further indication that there was scant likelihood of such measures being applied.

- Germany's great reliance on imports of fish meal for swine and poultry feeding is shown by figures for the twelve month ending June 30, 1960.

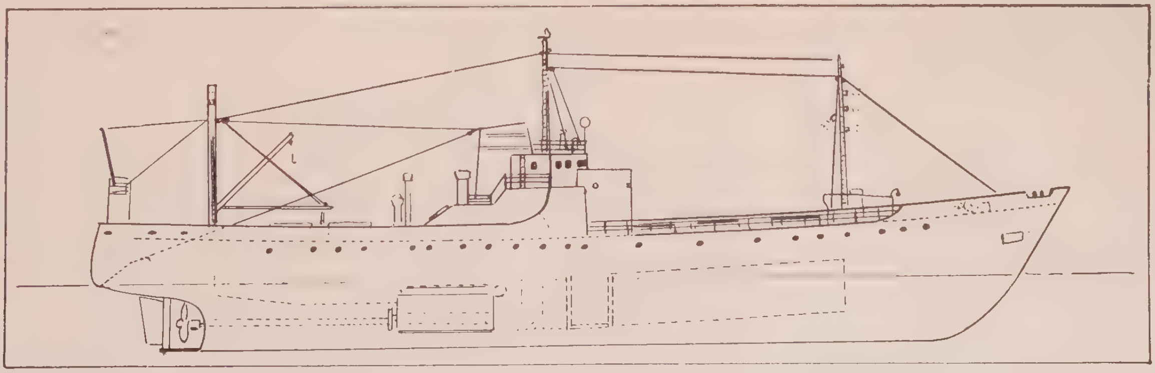
In that period domestic production was 94,900 tons, of which 9,500 tons were exported.

In the same months, West Germany imported 179,200 tons.

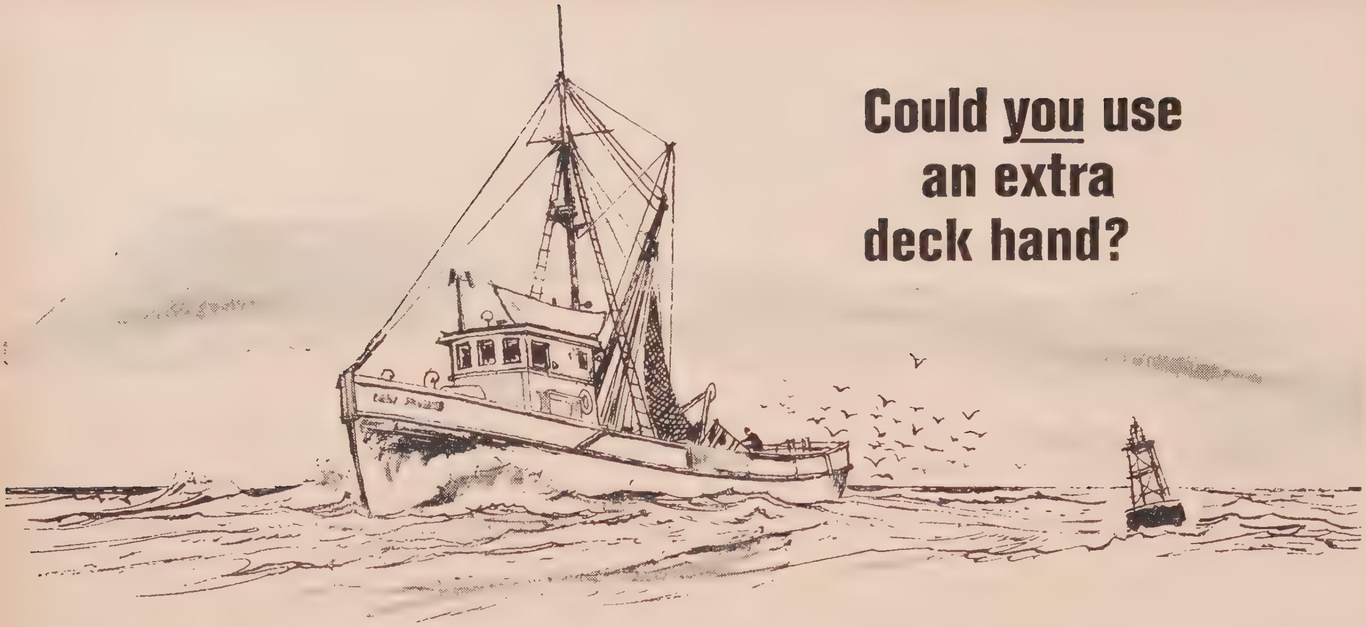
Apparent consumption during the year—production, plus imports, less exports, plus stocks on hand July 1, 1959, less carryover on hand June 30, 1960, was 261,400 metric tons, up from 215,900 m.t. in the corresponding period of the preceding years.

The increase in consumption apparently resulted from the lower price with its resultant saving to the farmers of $28.5 million.

- Beside the severe decline in income experienced by the German reduction industry, the fish producers themselves have suffered to the extent of more than $5 million. German trade agencies point out that the decline in prices paid by the reduction industry for raw material has reduced the income of the fishing industry, fish processors, and fish dealers by some DM 24 million (US$5,474,000) during the past twelve months. The fishing trade has already made presentations concerning the deterioration of its financial position to the Federal Government and to the governments of the coastal states. While the payment of direct subsidies to the fishing industry has been rejected by public authorities, no decisions have yet been made concerning other kinds of support, such as deferment of the amortization of



Carl Wiederkehr, West German stern-trawling factoryship of advanced concept. She is 220′ in length and is powered with a 1,650-hp. diesel working through a controllable pitch propeller.



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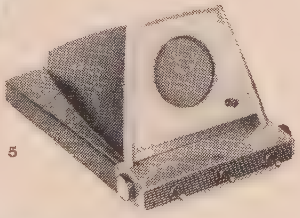

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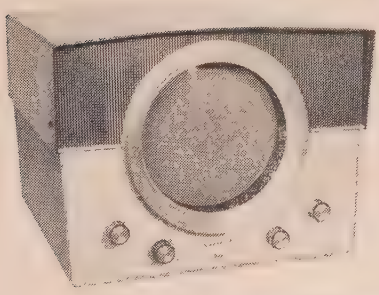

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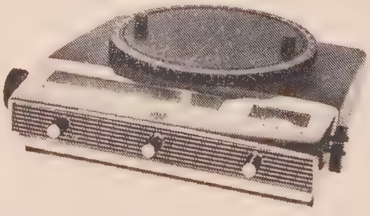

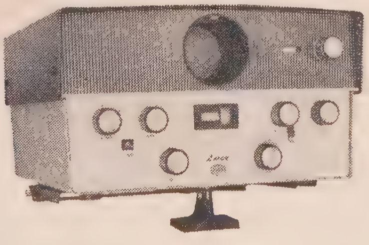

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WEST GERMANY

Anton Dohrn, German Federal Republic high seas research vessel, typical of West German devotion to scientific study. The vessel is equipped primarily for biological and oceanographic studies, but also for technological investigations, particularly in the field of freezing fish at sea.

government loans, the granting of additional low-interest government loans, etc.

- According to semi-official sources, the West German reduction industry in mid-summer, 1960, was paying the following prices for whole fish: whitefish, DM 43 (US$10) a metric ton; ocean perch, DM 65 ($15); and herring, DM 85 ($20) a metric ton.

Prices for fish offal or waste from fish processing and filleting (which represents about 60 percent of the total raw material used by the reduction industry) are only slightly lower than whole fish for reduction.

In August, 1960, the price for herring offal was to be reduced by the fish-meal plants to DM 70 ($16.67) a metric ton.

Leading West German manufacturers have stated that the average production cost per metric ton of fish meal fluctuates between DM 280 and DM 330 (US$67 and US$79), the average being about DM 300 (US$71) a ton. These figures include wages, fuel, maintenance and write-off of equipment, packing, sales tax, the manufacturer's profit margin, etc., but do not include the cost of the raw material.

- Importance of Peru as a supplier of fish meal for the German market in the past year may be gained from the data which show that of the imports of 179,200 metric tons in the year ending June 30, 1960, Peru supplied 129,300 metric tons.

Corresponding figures for the previous year are 140,800 tons of imports, of which 57,400 were from Peru.

- West German devotion to fisheries research, the gigantic long-range trawler, and now the integrated fishing factoryship continues as one of the world's notable trends in fisheries development.

A second great stern-trawling factoryship — the 220′ *Carl Wiederkehr* —was commissioned in 1960 and took her place as perhaps the most modern and notable vessel of this type currently active on the world's seas in the year past.

One of the interesting features of this vessel is the employment of the reinforced and specially-strengthened funnel as an elevated hauling point from which the trawl gear and loaded cod end can be brought up the stern ramp with less strain on the gear than that resulting from a more nearly horizontal pull over the curve of the ramp.

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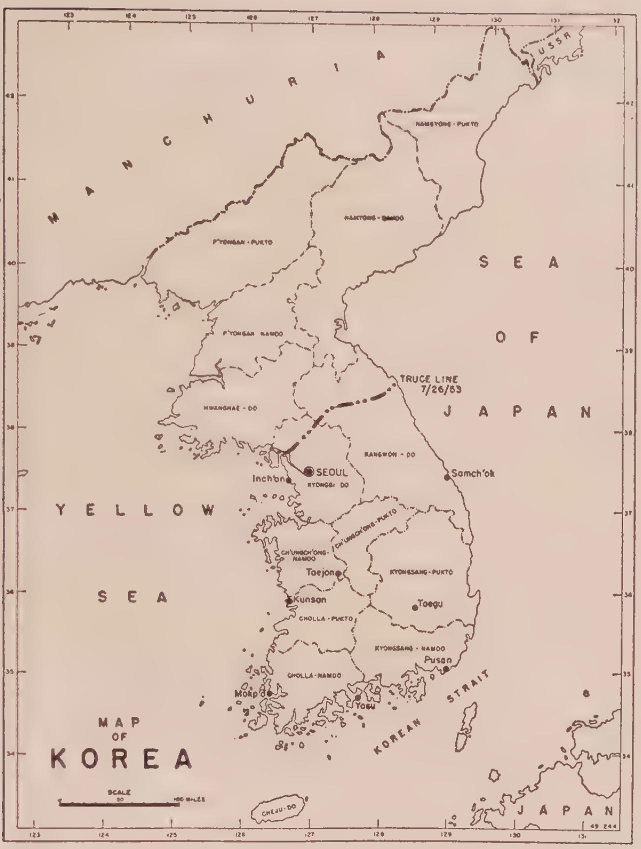


By BYONG K. LEE

● Korea is a natural fishing country, as is proved by the fact that in 1937 she produced a total catch of 2,000,000 metric tons, a harvest comparable to the annual US catch. (This was for both north and south Korea combined).

For 40 years, 450,000 to 500,000 Koreans have made their living by fishing and processing fish. Korea is short of foodstuffs and has to import food and fertilizer to make up for this shortage. Although cattle is grown on the peninsula, Koreans like fish, and fish and seafood are the largest source of protein in the Korean diet.

The great need in the Korean fisheries today is for mechanization of equipment, and skilled technicians to run mechanical machinery.

● Korea now has a fishing fleet of about 48,000 vessels, most of which are small, and the great majority of which depend on their sails for propulsion. About 8,000 are powered, these boats being in the range of five to 20 tons of fish capacity.

With this type of fleet, Korean fishermen are pretty well tied to inshore operations. The great need is for bigger, mechanized, refrigerated vessels which can fish offshore for pelagic fish, and could range as far as the Indian Ocean to catch tuna.

The Government is doing all possible to encourage the building of a large mechanized fleet, and Korea is getting some help from the International Co-Operation Administration, which has a program of construction and training under way in Korea.

● The fishing waters around Korea are among the best in the world. To the west is the Yellow Sea, a shallow, protected arm of the Pacific. The bottom here is sandy or muddy, water being an average of 75 meters (about 40 fathoms) deep, and conditions are ideal for dragnet fishing. From the Yellow Sea come Korea's big catches of flounder and other bottom fish.

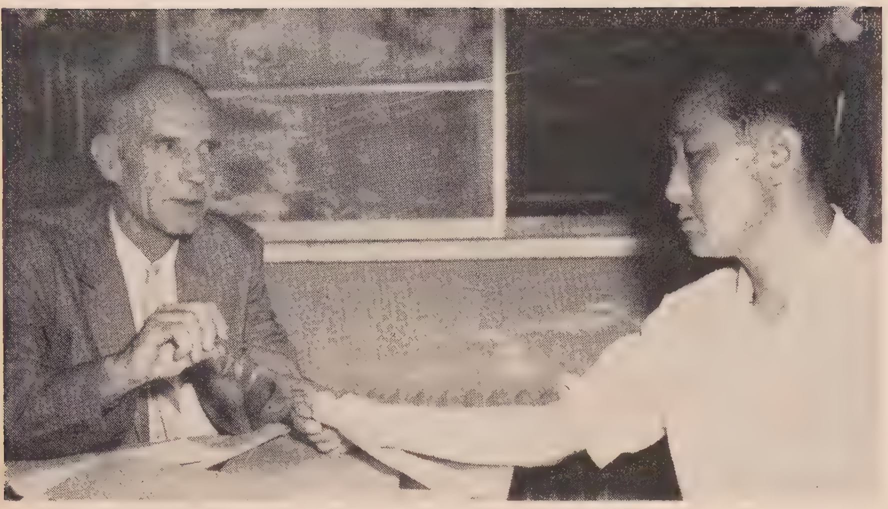
To the East is the Sea of Japan, where both warm and cold currents bring quantities of Alaska pollock, cuttlefish, shrimp and whales. The bottom here shelves off rapidly to depths of around 2,000 meters (over 1,000 fathoms) a few miles off the coast. The bottom here is rocky and does not lend itself to dragnetting, but school fishing is productive. This used to be a good area for sardines, but Korea, like California, lost her sardines in the Forties, and the country has produced virtually no sardines nor sardine meal in almost 20 years.

Abalone and sea urchins are caught in the deeper waters of the Japanese Straits, and in these waters migratory fish are also trapped.

Off the southwest coast near Pusan (Lat. 35 deg. 10 min., Long. 128 deg. 4 m.) and the waters surrounding the offshore island of Ullung-do, there is good fishing for mackerel, cod, anchovy, hairtail and cuttlefish.

The island of Chezu-do is an important fishery station for Korean fishermen providing safe harbors and supply points offshore from the mainland.

● Korea boasts of more than 80 species of fish and seafood. Among the most important varieties are Pacific and Jack mackerel, anchovies, Alaska pollock, croaker, cod, flounder, carp, flathead, shad, Spanish mackerel, yellowtail, gurnard, mullet, sardine,



Korean Fisheries Development is aided by International Cooperation Administration experts such as **Harry J. McCool** of Seattle, left, shown here in consultation with an officer of the Republic of Korea's Office of Marine Affairs. Mr. McCool is an experienced fisherman and for nine years was vice president of the Fishermen's Cooperative Association, Seattle.

porgy, shark, lance, perch, and mollusks and crustaceans. The most important shellfish in Korea are oysters.

This harvest is brought in by a fleet that badly needs replacements and mechanization. Until recently, the gear used by Korean fishermen was closely akin to Japanese gear, but lately there has been considerable conversion to gear more commonly seen in the U.S. Purse seiners are growing in number, and some of them use power blocks and diesel propulsion power.

Korea has adequate and fairly modern facilities for making net and rope. There are 20 major net and about 15 major rope factories in the nation, and besides the production from these factories, considerable netting is made at home, some by machinery and some by hand. All the modern fibers are used—nylon, kuralon, etc.—besides the ancient natural fibers such as Manila hemp, abaca and palm fiber. All these raw materials are imported.

- There are now in Korea about 48 canneries, working on both fish and vegetable products. At one time, as in California, sardines were a leading canning species, but since 1941 the Korean sardine pack has been negligible.

The leading canning varieties are mackerel, scallops, ear shell, top shell, sea eel, white and red clams, crabs and oysters. Shrimps, anchovies and tuna are also canned.

Drying is another widely-used method of preserving fish in Korea. A significant quantity of the catch is also salted. But the shortage of preserving facilities puts the fishermen up against the need for selling their catch on the spot, at auction, and often at disadvantageous prices. Some co-operatives

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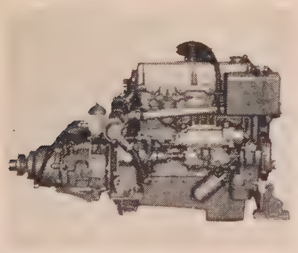

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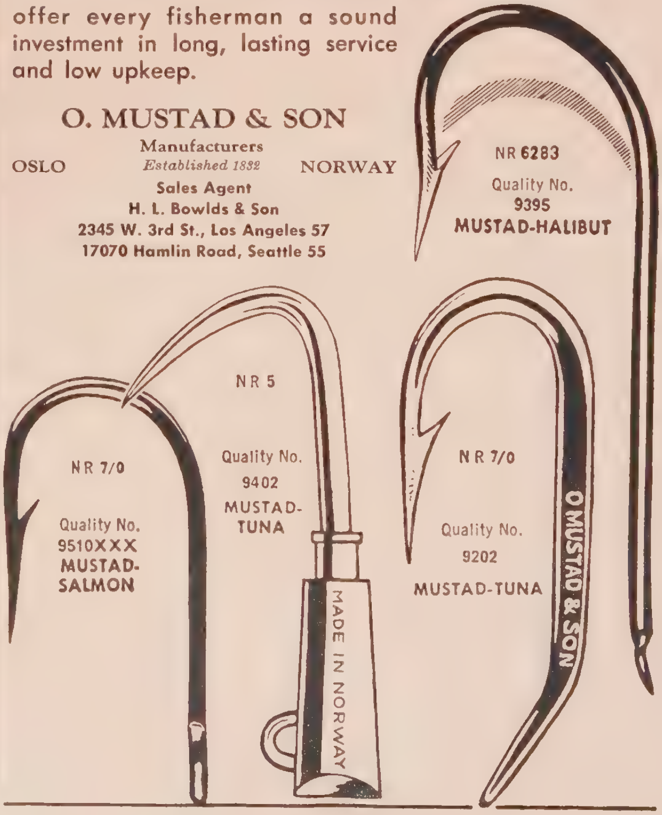

are relieving this price pressure by operating their own freezing plants, in which the day's carryover can be held and sold later, but not all co-ops have freezers. The co-ops also operate salt tanks, dryers and other preserving facilities.

- About half the fish produced are sold fresh. The fishermen dispose of their catch mostly at auction through the fishermen's guilds, selling to brokers. Between the brokers and the consumer are the usual middlemen—wholesalers and retailers — whose mark-ups raise the consumer's price of fish to about 60% above what the fisherman gets at dockside.

There is good transportation between the principal fishing ports and the big markets inland. From Inchon to Seoul a rail line is in service, and a highway provides travel and transport from Pusan to the capital.

Sanitation is a problem all along the line. A fish-market sanitation law promulgated in 1948 sets up reasonably sanitary standards for markets, but enforcement is weak. In many places there is a shortage, or total lack, of running water, and covered display-cases are scarce. Ice supplies are short in many places, and all these things combine to raise a serious sanitation problem.

But a start is being made. The Government Fisheries Bureau, with I.C.A. help, is setting up a new, modern fish market and fish center in Pusan, the leading fishing port. This will not only in itself improve the situation, but will set a standard for other cities to follow.

- The Combined Economic Board in South Korea in the spring of 1960 approved US$700,000 of International Cooperation Administration salable imports for fisheries supplies for South Korea's fishing industry.

According to data released by the South Korean Office of Marine Affairs, a total of $17 million of United States aid funds has been allocated for fisheries development since 1953. The money was about evenly divided between investment projects and imported supplies. The fishing industry suffered severe damages in the typhoon of September 1959, when nearly one-third of the total fishing fleet was destroyed. Second to housing, fisheries rehabilitation is receiving highest priority in allocation of typhoon relief funds.

Byong K. Lee, author of the accompanying article. He is senior officer of the Fisheries Planning and Statistical Section, Fisheries Bureau, Office of Marine Affairs, ROK; and is a graduate in fisheries economy of the Pusan Fisheries College.

The havoc of Typhoon Sarah which hit Korea in September, 1959, is estimated to have cost the fishing industry fully one-fourth of the potential production of 1959, in addition to vessels lost.

Out of a fleet of 37,000 fishing craft, 11,000 or nearly one-third were destroyed and numerous other vessels were damaged.

- Korea's fish meal production has suffered the same fate as California's: when the sardines disappeared, the meal industry went with them.

There is, however, the beginning of an oil industry. Whale oil production is probably on the increase, judging by the growing number of oil-bearing whales being taken. No figures are available on the oil output itself. Shark-oil production is on the increase, and the Pusan Fisheries Experiment Station is testing processes for extracting oil from mackerel.

Vitamin oils are an increasing source of foreign exchange for Korea. US importers are showing a continuing interest in Korean fish-liver oils, and Korea exports a small quantity of vitamin pills derived from fish livers to South Asian countries.

At present Korean vitamins suffer from improper grading of the ingredients. Korean fishermen also need training in handling fish livers. Most of them leave the livers in the fish until the fish are unloaded, possibly days later, at the dock. But with shark and cod, they are learning to remove the liver at the time the fish is caught, and preserve it aboard by icing.

Exports

- Naturally, in a dollar-short nation like Korea, one of the main concerns is to increase exports. At present, the important export products are dried cuttlefish, dried anchovies and shrimps, laver (a marine growth and agar agar, which is derived from kelp. Fishery authorities are aiming toward developing an export industry in salt mackerel, codfish, oysters and canned marine products.

Low Tide at Inchon, Korea's big gillnet port. This view shows the fishing port, with typical sail drifters aground at low water.

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CANADA Atlantic

● Fishermen of Canada's Atlantic provinces found 1960 a relatively good year, even though they hardly expected it to match the all-time record of 1959.

The fishermen were busy most of the season and many of them used bigger and faster boats to harvest an increasing volume of fish; but they could not help worrying about the future, which they felt depended so much on the ever-increasing pressure from big foreign-owned trawlers.

An unprecedented record of 688,567,000 lbs. of fish were landed in 1959 by 16,000 boats from the Maritime provinces, about 25,000,000 lbs. more than in the previous year.

But while operations in 1960 were satisfactory in most areas, and fisheries authorities predicted conditions in the industry would continue bright, many fishermen complained that it was becoming increasingly difficult to make good catches—and they blamed the "invasion" of vessels from across the ocean, some of those vessels being three or four times as big as the Canadians'.

The opinion is widely held that Canada will have to expand her fishing industry on the Atlantic coast to keep pace with this competition. The fishing grounds of the Northwest Atlantic have been fished for generations, but only within the past 10 or 15 years have foreign fleets been serious competitors close to the Canadian coastline. Steadily rising costs of boat construction is one of the problems facing the industry in trying to meet this competition.

● The industry was gratified by the decision of the Canadian government to discontinue the ironic situation which made Canadian trawlers and draggers subject to arrest within 12 miles of the coastline while foreign-owned vessels were able to fish up to the 3-mile limit.

The decision was made reluctantly because the 12-mile limit had been maintained over the past 30 years as a conservation measure, especially for the benefit of inshore fishermen, and it had been felt in recent years that this restriction, applied to Canadian vessels, would strengthen the hand of Canadian negotiators at the Law of the Sea Conference when an effort was made to establish such a limitation on an international basis. When this effort failed, it became logical to give Canadians at least an even break with the foreigners.

● The most frequented fishing grounds of the Maritimes are off the east coast of Newfoundland—the Grand Banks, whose underwater plateaus stretch far into the Atlantic. Other fishing banks of importance are located off the coasts of Nova Scotia and New Brunswick. The most common groundfish catches are of cod, redfish, mackerel, haddock, pollock and various types of shellfish. Herring is the important factor in the "pelagic and estuarial" division.

The saltfish industry of the Maritimes enjoyed a good Caribbean market for hard-dried fish. Shipments of boneless fish moved steadily to U.S. buyers and, with the easing of the exchange situation, foreign interests were competing with Canadian drying plants for supplies of saltbulk. Saltfish warehouses were practically empty before the new season's catch begun to arrive.

Although export prices in all these categories were at a slightly lower level than in 1959, total value of shipments increased because of the greater quantity demand. The important lobster fishery produced a catch of about the same size as in the previous year, but of less value because unit prices were lower.

Early start of the herring fishery in the Gulf of St. Lawrence and in the bays of Newfoundland's south coast benefited all lobstermen because it insured their bait supplies and of course also increased the income of Newfoundland and New Brunswick herring fishermen.

Main problem of the Atlantic coast sardine industry is the unpredictable nature of the herring. The export market demands a guaranteed supply and firm prices six to seven months in advance. Research to determine the herring's spawning habits is being requested.

● Canada's Atlantic fisheries last year followed a tough precedent, because never before had fishermen in that area sold a year's catch for as much as they got for it in 1959. Value of landings in that year was close to $60,000,000, only New Brunswick failing to set a new record.

The cod catch in Newfoundland waters for the year under review was about the same as in the previous season — between 412,000,000 and 415,000,000 lbs., but with higher prices to fishermen and reaching a total value of some $10,500,000.

The Newfoundland haddock catch was down to about 24,000,000 lbs. with no change in unit prices, and the catch of plaice and greysole was up about 50%, with unit prices holding, since they have served as a sub-

CANADA Atlantic

stitute for haddock.

The redfish catch was up about 10% and represented an increase in value of about 10%. Squid fishing was described as very good, about double 1959's in both volume and value. Lobster landings ran about 17% ahead of the previous year, with values up about 11%.

The Newfoundland salmon catch was down about 10% in quantity and 4% in value, although prices were relatively high. Herring landings to the end of September were 33% heavier than in 1959 and 30% more valuable, although with that unpredictable species there was no way of telling what the final tally might be.

Except for cod and flatfishes, the Maritime provinces (Nova Scotia, New Brunswick and Prince Edward Island) fisheries production ran below the 1959 figures. For the first nine months, for instance, the cod catch was 12,450,000 lbs., compared with 19,113,000 lbs. The herring catch for the same period totalled 35,344,000, compared with 38,530,500. Total nine months' fisheries harvest for the region was 82,237,000 lbs, compared with 1959's 89,855,900 lbs. and respective values were $82,237,000 and $89,855,000.

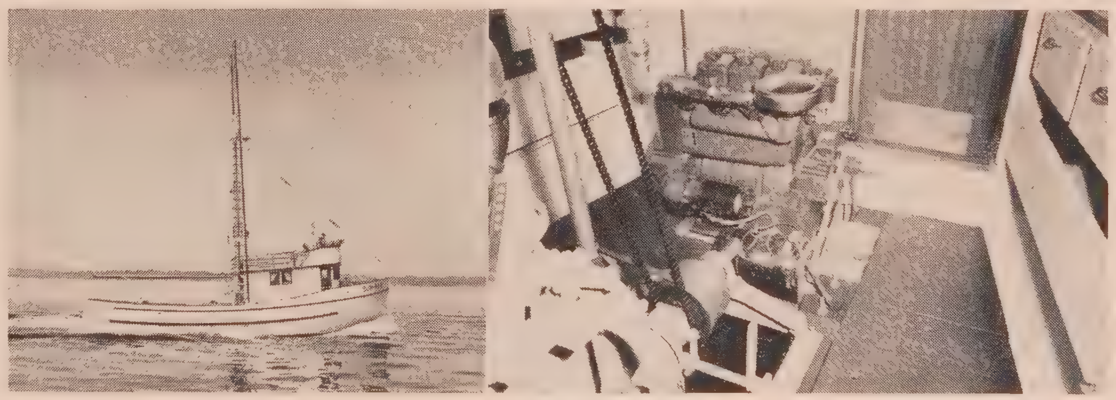
● Most vigorously expanding mollusk fishery is that of the sea scallop with 1960 landings at a new peak due to more intensive fishing by offshore boats off Georges Bank. Weather is the controlling factor in the price of lobster and last year it compared favorably with 1959 when Maritime lobstermen caught nearly 40,000,000 lbs. with a landed value of $15,000,000. Nova Scotia is the top producer, but lobsters are important to Prince Edward Island, too, accounting for more than 60% of the island province's fisheries revenue.

The oyster harvest was insufficient to meet demand, and it is expected that the shortage will continue until 1965 when the disease-devastated beds of Nova Scotia and New Brunswick start producing again. A three-year project involving the transfer of 10,000 barrels of disease-resistant Prince Edward Island oysters has been successful. The fisheries department is trying to develop a method of raising seed oysters to stabilize the industry. In that project, 40,000 cement-coated egg case fillers have been suspended in various Maritime areas. Growth has been excellent.

● The ground fish catch in the Maritimes, which amounted to about 405,000,000 lbs. in 1959, ran about 20% lower in 1960 and the total was approximately 320,000,000 lbs.

A summer run of cod, which had entered the Gulf of St. Lawrence in the past several years, did not appear last summer. Flounders were abundant, however, and in the freezing trade were used to replace scarce supplies. Output of all frozen groundfish declined by only about 5%. Increases in production of fillets of ocean perch (red fish), flounders and sole compensated for the scarcity of haddock fillets. A high proportion of the cod catch went into frozen blocks and the supply was sufficient to meet the requirements of the fish stick industry.

Large shipments of heavy wet salted codfish moved from Newfoundland to the drying plants of Nova Scotia, where it was expected there would be ample supplies for the winter's trade. Only boneless cod was in short supply. Somewhat smaller values were yielded by halibut and swordfish, the latter being particularly scarce last summer, resulting in higher unit prices that virtually offset the lower volume.



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FRANCE

• Fishing for tuna commands front rank in the potential of France for expansion of its marine fisheries. This is true as well of European France as of its residual interest in the tuna fisheries of far western Africa, where Dakar stands as one of the largest, and certainly one of the most promising tuna ports of the world.

French tuna fishing in 1960 continued decidedly active on the basis of European landings, and was expected late in the year to show a sharp rise from the previous year's landings of 22,472 metric tons, which were in themselves an increase of one-third over 1958.

FRANCE—Fish Consumption Per Capita, in Kilos

Style	Kilos annually
Fresh and Frozen	7.12
Salt and Smoked	0.35
Salt Cod	0.66
Canned	2.02
Shellfish	3.00
Total	13.15

Total equivalent in pounds, 28.93.

French enterprise in the tuna fisheries has been stimulated by a minimum price agreement between canners and fishermen, and the return from that fishing has increased sharply as result of growing utilization of the live bait method of fishing.

French tuna fishing ports find that vessels using live bait frequently will catch two to three times as much tuna as similar vessels fishing without it.

St. Jean de Luz currently is the ranking tuna port of France, followed by Concarneau and is particularly notable for the amount of white meat tuna landed. Deliveries of Albacore on the Atlantic coast of France are approximately ten times those of light meat tuna, primarily Yellowfin.

On the other hand, French landings of tuna in west African ports tend to be composed very highly of Yellowfin.

• French tuna producers in 1960 manifest keen interest in the development of export markets for their products, and it is interesting to note that the first delivery of tuna at the new cannery of Star-Kist Caribe, Inc., in Mayaguez, Puerto Rico, was French caught tuna transshipped from Dakar.

French herring fishing continued through 1959 and well into 1960 in a depressed condition, primarily as a result of low catches, the average of which was only about two-thirds that of the previous five year period.

French opinion was inclined to ascribe this condition to depletion resulting from excessive exploitation, and in large part from the use of the fish for reduction purposes. They believe that the condition could be corrected basically by prohibiting the landing of herring beneath certain sizes. Of the French herring catch more than half is salt cured, with about a third sold fresh. Of the salt cured herring approximately half are in fillet form.

• French canned sardines continue of the highest quality and command an excellent market, largely in the domestic trade. The quantity, however, is not sufficient for all domestic needs and imports under close government limitation are required to meet the French demand, with a small margin of export goods to the American market.

Salt codfish continues its long history as one of the basic fish products of France, this form of preparation accounting for the great majority of the French production of approximately 60,000 metric tons of cod annually. While much cod is utilized in the French domestic market, Portugal is one of the leading customers, annually taking about 2,000 metric tons of salt codfish from France.

FRANCE—Fish Canned, 1959

(Gross weight used in metric tons.)

Type of Fish	Tons Canned
Sardines	18,500
Tuna	22,500
Mackerel	23,000
Herring	4,800
Anchovies	620
Trawl Fish	7,200
Shellfish	1,200
Total	77,820

• Canning consumes about 20% of the French total catch, and shows some unmistakable signs of growth with a closely concentrated industry and larger capacity plants of strictly modern character. Brittany is the area of greatest concentration.

Less than 10% of the fish used for canning in France is imported.

Per capita consumption of fish in France runs more than 2.5 times that of the United States. A very large part of the domestic consumption consists of fish sold in the coastal towns and in the inland country immediately tributary to them. Thus a very large part of the French fish consumption is of fresh fish, and it is in the expansion of this trade through improved refrigeration and distributive methods that the future potential for growth appears to lie.

• France, being a great agricultural country, with particular interest in animal husbandry and poultry raising,

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FRANCE
Fish Meal Imports

Metric Tons

Country of Origin	1960 1st half	1958 total
Benelux	90	—
Chile	792	—
Denmark	—	534
Iceland	—	1,384
Japan	—	565
Morocco	1,279	9,653
Norway	4,488	16,971
Peru	7,938	1,871
Angola	148	1,442
St. Pierre	191	—
Tunisia	83	—
S. Africa	302	2,741
U. K.	20	3,461
Other	251	1,240
Total	15,582	39,862

imports about half of its fish meal production. This is in spite of the fact that in recent years the quantity of fish meal produced domestically has increased rather strongly, probably due in large degree to the increased amount of raw material available as waste from cannery and fillet plant operations. However, as only about 20% of France's fish production is canned and less than 10% filleted, it is obvious that the amount of offal produced and available for reduction is not great. Also, the offal source of much of the fish meal reacts in some degree at least against the quality of the product.

Any development of the use of whole fish for fish reduction purposes in France was checked at the end of 1959 with the suspension of the theoretical 15% duty on fish meal. This duty, although reduced to 10%, was re-imposed in February of 1960, but the availability of low priced Peruvian fish meal adequately supplied the French market without the development of further domestic facilities.

Most French fish reduction plants have far larger capacity than they normally utilize and it is believed that the present facilities could, but probably will not meet the entire domestic demand. French consumption of fish meal is about 2.2 pounds per capita annually, and is relatively low in comparison with neighboring countries. Thus, Great Britain utilizes a per capita of 11 pounds, the Netherlands 22 pounds and Denmark the extraordinary per capita of 40 pounds.

However, French agricultural authorities believe that the fish meal consumption, on a per capita as well as a total tonnage basis, may be expected to increase because of the growing demand of cattle breeders, dairy and poultry farmers.

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PORTUGAL

● Seeking a means of invigorating its fish marketing practices, the Portugese government through the Secretary of State for Commerce late in 1960 formally installed an eight-man committee composed of industry and government representatives to study the regulations and operations of the cooperative type marketing groups and manufacturers and exporters of canned fish.

The findings of the committee, if implemented by the government, may have much significance and effect on the marketing practices of the fish canning industry. A second committee is also to be appointed to survey the relations between fishing and fish selling practices and the packing industry. It is anticipated that reports will not be complete until well into 1961.

● An interesting aspect of Portugese fishery activity in 1960 was the introduction of 50 live striped bass, which were shipped from the United States to Lisbon and planted in a seawater lagoon in the hope of establishing a European run of this favorite food and sport fish, as was done by the introduction of this species to the Pacific Coast of the United States from the Atlantic states.

● Portugal's 1960 cod catch on the Greenland and Newfoundland banks was much better than in the two preceding years.

Approximately a dozen of the long range trawlers made two trips during the year, as compared with only four which succeeded in filling their holes to capacity in 1959 in time to deliver and return to the banks for a second trip.

Portugese canned fish exports in the first quarter of 1960 showed a decline of 5,695 metric tons as compared with the second quarter in 1959. There was a decline also in the pack of canned fish, but this was much less notable.

The entire Portugese canned fish pack is put up in olive oil of which the country is a leading producer. In 1959 the production of Portugese canned fish in metric tons was: sardines, 49,438; small fish resembling sardines, 852; anchovy fillets, 5,624; tuna, 4,495; mackerel, 583; other species, 1,467; total, 62,459 metric tons.

Portuguese Canned Fish Exports, First Half 1959 and 1960

PRODUCT	Jan.-June Metric Tons 1960	Jan.-June Metric Tons 1959
IN OIL OR SAUCE:		
SARDINES	22,244	24,819
CHINCHARDS	412	....
TUNA AND TUNA-LIKE	997	1,184
ANCHOVY FILLETS	2,062	3,296
MACKEREL	125	2,032
OTHERS	154	1,295
TOTAL	25,994	32,626

● Exports of canned fish from Portugal during the first half of 1960 aggregated 25,994 metric tons, with canned sardines accounting for 85.6% of the total.

Anchovy fillets were the next item in importance, accounting for 7.9% in tonnage. Value of the fillets percentage wise undoubtedly would be greater.

In the first half year of 1960 Germany was Portugal's principal canned fish customer, buying 5,572 tons. The United Kingdom was second with 3,450 tons and the United States third with 3,064 metric tons. Other customers followed in order: Italy, 2,276 tons; France, 1,947 tons; Belgium-Luxembourg, 1,670 tons.

● At the end of the third quarter of 1960, prospects for the Portuguese cod and sardine fisheries were good, and the catch of other fish was at a very satisfactory level. Landings (exclusive of cod) for the first five months of 1960 amounted to 60,417 metric tons (15,393 tons of sardines) as compared withi 59,567 tons (11,994 tons of sardines) landed in the same period of 1959.

Landings by the trawl fishery during the first half of 1960 were down about 8% from 1959, but prices were appreciably higher and the value of the catch was greater. Prices paid for other catches, including sardines, also ranged higher.

● Portugal has no shrimp fishery or vessels that fish for shrimp exclusively. Small quantities of shrimp are hand-netted on a casual basis by individual fishermen for sale fresh in the retail markets. One or two freezing plants primarily concerned with other fishery products handle some shrimp, but the quantity is so small as to be negligible.

Shrimp landings (mostly small shrimp) in Portugal during 1959 amounted to 120.3 metric tons as compared with 75.5 tons in 1958 and 48.8 tons in 1956.

Portuguese fisheries officials doubt that there is much possibility of expanding the catch of shrimp to a point of importance. Shrimp, particularly the larger species, are imported from Spain into Portugal, and it may be that the Portuguese Government at some future date may attempt to expand the shrimp fishery.

- The Portuguese cod fleet in late 1960 returned from the Newfoundland and Greenland fishing grounds. Only one vessel was lost this season, the hand-line schooner *Condestavel*, of 77 gross tons, built in 1948, which burned and sank, fortunately without loss of life.

The catch for the 1960/61 season is estimated at about 64,000 metric tons of wet salted cod; not a large catch, but much more satisfactory than the catches of the 1958/59 and 1959/60 seasons, when 53,344 tons and 59,826 tons, respectively, were caught.

- In order to help assure than an adequate supply of fresh fish at low prices continues to be available until development plans for the fishing industry are implemented, a Portuguese ministerial order late in 1960 extended Government control measures over fresh fish distribution. The order of the Ministry of the Navy and the Secretariat of State for Commerce established maximum profit margins for wholesalers and retailers, confirms current maximum auction prices at the wholesale fish markets, limits the number of middlemen between fishermen and consumer, and otherwise establishes regulations to enforce distribution at the planned prices. As in the past, prices of a number of the most highly regarded commercial species remain uncontrolled.

MALAYA

- Malaya entered the growing group of the world's tuna canning countries in 1960 when the first trip of tuna was delivered early in the year to the plants operated by the Malayan Marine Industries Ltd. at Panang.

Operations continued actively throughout the year with the company handling approximately 200 tons of tuna per month.

Malayan Marine Industries Ltd. is the only company in southeast Asia engaged in the tuna fishing and canning business. Organized late in 1959, the company is owned 51% by Malayan capital and 49% by Japanese. Taro Saitoh and Chan Chi Lum, are its deputy managing directors. Their enthusiasm is great and their sights are set high, for late in 1960 they write to *Pacific Fisherman International Yearbook*: "We are making very fast progress and we are certain that in a few years we shall be one of the biggest tuna packing companies in this part of the world."

The Malayan tuna operation at present is conducted through four chartered 100 ton Japanese tuna longliners, fishing in the Indian Ocean and delivering their catches to Penang. The trips are about a month in duration, dock to dock, and the catch consists of yellowfin tuna, bigeye tuna, seasonally of albacore and several of the spear fishes.

Tuna resources in the Indian Ocean adjacent to Malaya are reported "limitless." Crews of the four fishing vessels through 1960 consisted of Japanese but the Malayan ministry of agriculture has a fisherman's training program under way, and it is anticipated that in the future fishing operations will be conducted primarily by Malayan crews. Sauries, imported from Japan, are used as bait on the typical Japanese longline gear.

The tuna vessels of course are refrigerated and on reaching port fish are held in refrigeration aboard the vessels until after sunset, in order that they may be discharged in the cool of the day. A thoroughly up to date freezing and cold storage plant was completed by Malayan Marine Industries Ltd. late in 1960. This establishment is the first of its kind in Malaya and has freezing facilities for freezing 7 tons of tuna per day at temperatures of minus 30 centigrade. Storage capacity is provided for 200 tons of tuna at minus 20 centigrade.

- Through most of 1960 the Penang tuna canning was conducted in two existing plants in that city, but Malayan Marine Industries Ltd. had under construction late in that year a modern tuna cannery in which its activities subsequently will be concentrated. Equipment of this plant, as well as that of the cold storage is all being imported from Japan.

Japanese technicians with first grade certificates supervise all of the work of canning, processing and freezing, at the same time teaching Malayans the required technology.

In addition to its export products, canned albacore, yellowfin and bigeye tuna in standard packs, for local consumption Malayan Marine Industries Ltd. manufactures tuna sausages, tuna canned in curry and tuna canned in soya sauce; as well as tuna meal from cannery waste.

In 1960 Malayan Marine Industries Ltd. acquired "pioneer status" from the Malayan government. This status confers exemption from income tax for a period of 5 years, a device by which the government of Malaya encourages establishment of new industries in that country.

SIERRA LEONE

● "Tuna is the future of the fishing industry in Sierra Leone."

This statement by the Officer in Charge of the Sierra Leone Government Fisheries Development and Research Unit, uttered late in 1960, sums up in a few words the informed opinion of that country following its initial period of active industrial exploitation of its ocean fisheries resources.

Through the first two thirds of 1960 at least, large schools of tuna were found in the Atlantic Ocean outside of territorial waters of Sierra Leone, but within a short distance of Freetown, its capital. With 30 tuna fishing vessels active out of Freetown, and the tuna abundant only a short distance off shore, the industry gave a ready demonstration of its productive potential.

United States and Japanese tuna fishing vessels conducted exploratory surveys in the coastal waters of Sierra Leone in 1960, and at least one United States tuna canning firm started buying tuna fares of Japanese and Spanish clippers at Freetown. The fish in general was landed and frozen by an Italian firm at Kissy, near Freetown; and subsequently was shipped to the United States in refrigerated carrier.

In 1960 the tuna fishery of Sierra Leone was producing solely for shipment abroad in frozen form; but as in the case of other West African countries, there was developing a definite movement for a domestic canning industry which could increase the economic return from the resource through the value added in the canning process.

This is something for the future, but Sierra Leone was not waiting at the end of 1960, but was capitalizing upon the export market for the frozen product for canning abroad.

● Development of Sierra Leone as a tuna fishing base and shipping point moved ahead sharply in 1960 following the acquisition of a small 150 ton capacity cold storage plant at Freetown by the Van Camp Sea Food Company of California. Within the next few months this plant was raised in capacity to an estimated 500 tons, and there were published reports in official circles that the plant eventually would be increased to a capacity of 3,000 tons.

This was to be a part of a program for the development at Freetown of a major Atlantic tuna fishing base. An arrangement was announced early in the year whereby one of the large Japanese tuna fishing companies would utilize the facilities as a base and this action was followed shortly by the delivery there of a total of 1,150 tons of albacore by three Japanese fishing vessels.

Tuna from this point was understood to be destined for shipment to the Van Camp affiliated cannery of the National Packing Company at Ponce, Puerto Rico.

● A notable characteristic of the Sierra Leone fishery in the coastal area within a few hundred miles of Freetown is the large percentage of Albacore taken at certain seasons of the year.

During this time in particular European fishing vessels, notably those from Spain, are attracted to the Freetown offing by the ready availability of these Longfin tuna, with their ability to command top price in the international markets.

● The officer-in-charge of the Sierra Leone Government Fisheries Development and Research Unit states that "the future of the fishing industry in Sierra Leone is tuna; it's a big earning crop and it is highly valuable."

From an undeveloped industry which mainly consisted of indigenous fishermen going out to fish in small canoes, Sierra Leone's industry has developed into an organized industry. This progress is reflected in the increase in the tonnage and value of fish landings; the techniques, the encouragement by Government of foreign firms, and the benefits accrued from research carried out by the Government Fisheries Development and Research Unit at Kissy, which replaced the West African Fisheries Research Institute in 1957.

In 1959, landings by ten trawlers were about 273,301 cases of demersal fish, weighing about 2,375 metric tons and having a landed value of U. S. $411,000.

Total fishery landings in Sierra Leone in 1959 are estimated at 23,750 metric tons.

● Sierra Leone is the only country on the West Coast of Africa which has passed legislation to conserve its fisheries. The Fisheries Development and Research Unit has implemented protective measures to prevent overfishing. Big trawlers are not allowed to fish within one mile of the coast and in any of the estuaries. The Unit has introduced set nets to charter boats and it conducts fish preservation experiments. In addition, it carries out biological work to assist in the implementation of mesh-size regulations.

Fishing boats 28 feet long built in Ghana are made available to local fishermen by the Unit. Applications are received from local fishermen, and successful applicants are given a loan which they repay under a revolving loan scheme. Local fishermen are also trained by the Unit. The fishing boats are for the development of inshore fisheries. The Unit helps indigenous fishermen with set nets. Those with money buy the charter boats which cost £1,700 ($4,800) each.

Sierra Leone's fishing industry falls into two categories: (1) inshore fishing which consists of the charter boats and the large Italian-type trawlers; and (2) the offshore pelagic fishery for tuna.

A recent successful introduction has been the set net which is now in great demand by Sierra Leone canoe fishermen and promises to be a useful means of increasing their catch rate.

SENEGAL

● Senegal, the westernmost country in Africa, whose capital Dakar is the outstanding tuna port of the Atlantic at present, has established a target of 25,000 metric tons of tuna for its 1960-1961 season. This compares with a catch of 17,500 tons in the 1959-1960 season, which was the largest catch yet recorded for the Senegal operation.

This high objective has been established by the Senegalese Fisheries Service, of which J. Arnoux is chief, in spite of economic problems facing the industry faced in 1960.

These problems basically result from the high cost of producing the raw material under the seasonal period and methods hitherto applicable at Daker. It is the hope of the Senegalese Fisheries Service to extend the active season by several months, and to do this principally by increasing the number of Senagalese clippers active in the fishery.

Duration of operations have tended to be curtailed in the past by the departure of French clippers to their European bases late in the spring in anticipation of the opening of the home-based tuna fishery.

Economic studies indicate to the Senegal authorities the desirability of producing the tuna at a landed price of about 3.5c U.S. per pound. This is substantially below prices in the past, which often have exceeded this amount by 50%.

No secret is made of the fact that Senegal hopes to export its tuna largely in canned form, rather than frozen, because of the larger economic recovery and the benefit to the local population from cannery employment.

The Senegalese Fisheries Service was undertaking an active drive late in 1960 to increase the export of tuna from Dakar to the United States. At the same time, and to prevent adverse market reaction as well as loss to the operators in Dakar, the Service was seeking data by which it could instruct the Senegal canning industry how it should meet the requirements of the United States Food and Drug Administration, Customs Service and other official requirements as to labeling and procedure.

Specifically inquiry was made as to how cans were to be labeled and cases and cartons marked, as to any specific conditions in the processing of tuna in brine, in oil and in other styles; the inspection and processing specifications, identification as to species and other data required by African canners seeking to export the finished product to the United States.

● Record production of tuna was attained by Senegal (French West Africa) during the 1960 tuna fishing season. The catch during the main season reached 17,500 tons exceeding by 9.4% the target of 16,000 tons established as the season opened.

A total of 57 carefully selected and modern tuna clippers engaged in the fishery. Of these it is understood that 41 were Franch and 16 Spanish. The Senagalese government granted permission to engage in the fishery only to vessels considered competent. This restrictive measure was adopted primarily because of the experience in 1957-58, when more than 90 tuna vessels engaged in the fishery, flooding the French market with fish and producing some heavy losses.

Of the 1959-60 catch of tuna, 6,500 tons were canned for export to the French market; 3,000 tons were frozen and shipped to United States territory; 3,000 tons were sold to Italy; and at last report the remaining 5,000 tons were to be shipped to France for canning there.

Reports from Dakar state that the American firm contracting for and receiving 3,000 tons in 1960 has indicated that it expected to be in position to purchase about 10,000 tons of Senegal tuna in future seasons.

The price of round tuna at Dakar rose from a low of about U.S. dollars $128.64 per short ton to about U.S. dollars $169.10 a ton during the 1959-60 season. In the season of 1957-58 a big price was reached of U.S. dollars $213.20.

● Despite the favorable production conditions encountered by the fleet fishing out of Dakar, the canneries there, five in number apparently are not in a favorable position when it comes to world competition in canned tuna. A Senagalese fisheries official ascribes this adverse cost position to a number of factors in cannery operation. Among these are the high cost of electricity, which is eight times as expensive as in France; relatively low productivity of labor, which has paid higher wages than in the Japanese and Spanish canneries; the high cost of European supervisors and technicians; the fact that most of the processing equipment must be imported; and the relatively high price of the locally produced peanut oil used in canning.

The government of Senegal has initiated preliminary investigations with the ultimate objective of the erection of a "California type" tuna cannery which would have an annual capacity of perhaps 50,000 tons of fish. Such a plant, as visualized in the initial discussions, would be an integrated operation, consisting of the cannery itself, a freezing and cold storage division adjacent, a can manufacturing division and a reduction plant for the economic utilization of cannery waste. Financing of the venture was initiated with a grant of U.S. dollars $1,220,000 from the EEC development fund in August, 1960. Later it is hoped participation of private enterprise, some of it probably from the United States, will make possible the creation of a mixed public and private company for the tuna development enterprise.

Senegal, counting on Dakar's strategic location and the availability to it of large quantities of tuna is committed to the undertaking of making this tip-of-Africa port the prime tuna center of the eastern Atlantic.

As a market for its canned production Dakar appears to be cultivating the already existing market in Italy and France, and seeking to develop the market in West Germany, particularly for tuna in brine.

Apparently there is also the hope felt in Dakar that the interior market of Africa can be enlarged by sales promotion activity. In part for this purpose, a Senegal fisheries council was created in 1960 to act as a consultative body for matters concerning maritime fishing. It is to study technical, juridical, social and economic questions which are brought to its attention by the government or by private enterprise. The council is composed of representatives of the various ministries, services and agencies, the legislative assembly and the mali government. In addition to these, representatives of the various fishing industries, such as the tuna industry and fish cooperative, are to be appointed, and experts and specialists may be called upon as the situation requires.

MOROCCO

● With an exceptionally heavy sardine operation as the primary factor, Morocco's fisheries enjoyed a prosperous situation throughout 1960, which came to be proclaimed a "banner year" as it approached its close.

The sardine catch passed all previous records before September 10, when 65,000 metric tons of sardines had been taken since the beginning of the season. The previous annual record had been 61,000 metric tons. In the two months of June and July the canned sardines exported from Morocco exceeded 250,000 cases, a figure which had been exceeded only twice in the full years of the previous decade.

However, the figures for the tonnage export of Moroccan fishery products during the first seven months of the year were not favorable, due primarily to a very sharp reduction in the exports of fish meal, which fell to less than half those of the first seven months of 1959, and to less than a third those of this period in 1958. There was also a decline in tuna exports although fresh fish and miscellaneous fish products both advanced strongly.

Tuna exports particularly were disappointing as fishing for this species showed marked fall off.

There was some increase in the exports of canned fish exports other than tuna and sardines, these mostly being canned mackerel.

The 20% devaluation of the Moroccan franc late in 1959 was reflected in excellent demand for Moroccan canned sardines and shipments all through the early part of 1960 were maintained at a high level which prevented the usual accumulation of inventory awaiting sale.

The government restricted the export of fresh fish, particularly sardines, in the fear that these fish might be canned in foreign countries and put into competition with the Moroccan canning industry.

This restriction on the export of sardines made an abundance available for domestic consumption in the fresh fish market, so that prices were notably low in the coastal cities.

TRIPOLITANIA

● Tuna fishing season of 1960 ended in the early part of the last quarter of the year after disappointing production. Most of the canning factories closed down earlier than usual, but in the absence of any statistical data it was impossible to gauge the extent of the decline against previous seasons.

Despite excellent weather, local fishing operations were limited, as skilled labor was unavailable. Many of the Maltese fishermen, long resident in Tripoli, have turned to other much more remunerative occupations and are either engaged by off-shore petroleum geophysical survey organizations or have given up fishing for stevedoring or other employment. No marketing or other statistical data are available but local retailers confirm that the seasonal catch was far below the quantities normally obtained at this time of the year.

There were at least 36 licensed Greek sponge fishers operating in Cyrenaican waters during the quarter. Although there was no Greek sponge fishing activity in Tripolitania this season the Cyrenaican sponge beds, which have lain practically undisturbed for two years, were providing good catches. By mid-August, the sponge fishers midway point, the season was providentially free of fatal accidents and the fishermen predicted a catch equal to the high levels of 1955 and 1956.

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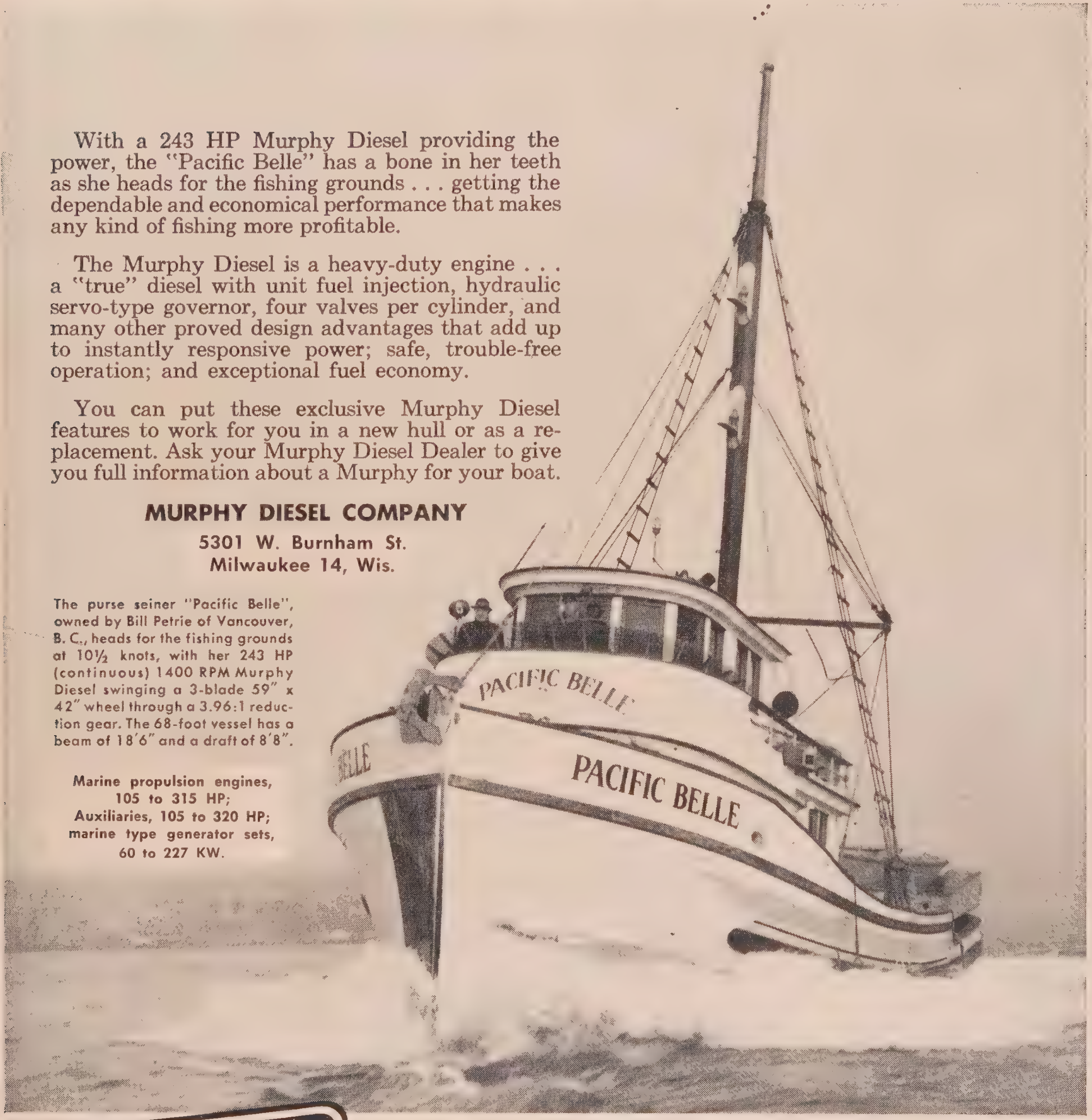

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NORTH PACIFIC

"Movement of Japan and the Soviet Union into the bottom fisheries of Bering Sea in 1958, 1959 and 1960 is among the most notable developments in the whole history of human fishing."

● This statement by a competent observer, himself an advisor of the American Section of the International North Pacific Fisheries Commission, must be accepted as a thoughtful assessment of the size and significance of enterprises which have employed hundreds of ocean vessels in the taking of enormous tonnages of food and industrial fish and King crabs.

Full details of the catch of these several operations are not available, but it is significant that Boris G. Kulikov, Soviet observer at the 1960 meeting of the North Pacific Commission, said the Soviet catch ranged from 10,000 to 11,000 tons of bottomfish monthly, and apparently the year 'round.

The Japanese catch of bottom fish is believed to be even larger, as a greater proportion is used for reduction purposes.

● King crab exploitation in eastern Bering Sea was broadly expanded in 1960 when Japan permitted a second expedition and the Soviet Union entered the crab fishery with an operation altogether distinct from that mounted for bottom fish.

The United States King crab fishery in Bering Sea was materially more active in 1960 than in recent years, although by far the larger part of it is pursued in territorial waters along the Alaska coastline below the Aleutian Chain and the Alaska Peninsula.

● Most sensitive area on which the Bering Sea exploitation impinges is that of halibut.

The halibut population of the Northwest Pacific to the present has been almost exclusively under fishery by the fleets of Canada and the United States, and since 1924 these nations have entrusted the administration and rehabilitation, as well as the scientific study, of the fishery to the International Pacific Halibut Commission, created by a bipartite treaty between the two nations.

This was the first international treaty enacted for the conservation of a shared high seas fishery, and the accomplishments under it have become classic in the history of rational utilization of natural resources.

The condition of the population has risen with the years under the wise-use policy and administration of the Halibut Commission, whose regulations govern the fishery by Americans and Canadians from California around the entire Pacific coastline north and west into Bering Sea.

Application to this fishery of scientific study and administration for sustained yield, as well as its full utilization and the historic positions of the United States and Canada, were recognized by the International North Pacific Fisheries Convention negotiated in 1951; and as result Japan abstained under the provisions of this convention from fishing for halibut originating along the cost of North America.

Under the control of the International Pacific Halibut Commission the annual catch of halibut taken by the American and Canadian fleets has risen to the neighborhood of 70 million pounds, a point at which equilibrium between annual recruitment and mortality—due both to fishing and to natural causes — appears to be approximated.

This level of apparent equilibrium in production—actually 71.5 million pounds in 1959—is 27 million pounds greater than the catch in 1931, the year immediately preceding the application of regulation to the fishery, following investigations which had been carried out since 1924.

The amount of increase in 1959 alone approximated a landed value of $5 million, about the amount which the governments of Canada and the United States have invested in their enterprise of joint conservation from its inception in 1924.

● Under these circumstances it is only to be expected that the fishermen and governments of Canada and the United States would view with some disturbance the exploitation by other nationals of stocks already fully fished by the fleets whose sacrifices have resulted in the up-building of the population to its present high level, at which an annual yield in the neighborhood of 70 million pounds seems capable of being sustained from year to year.

Furthermore, as the Halibut Commission staff reports in its latest scientific document: "The history of the fishery has repeatedly shown that . . . high fishing levels . . . actually resulted in sharply reduced yields."

● With the bottom-fishing fleets of the Soviet Union and Japan taking enormous quantities of other flatfish and demersal species from Bering Sea; and at least prospecting on the halibut grounds south of the Aleutian Islands and the Alaska Peninsula, and into the Gulf of Alaska, it will readily be appreciated that the fishermen of the United States and Canada regard the situation with something of alarm.

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PERU

By **ANCHOVETA**

EDITOR'S NOTE — The author of this article is a substantial businessman of Peru who preferred to remain anonymous in this interesting and intimate report on the fisheries of Peru, which have risen to a leading position in a period of a few years. Thus in 1957, when this journal devoted an issue to the subject, the title was: "The Fisheries of Peru—New Forces in a World Industry." They since have proven the validity of that appraisal.

● Before taking a close look at the Peruvian fishery events of 1960, let's glance at the scene as the year opened.

On Dec. 31, 1959, I find an entry in my notebook to the effect that at that date the Peruvian industry had sold forward approximately 250,000 tons of meal for delivery in 1960, and we were estimating production to run approximately 500,000 tons. I believe in actual fact, these estimates will prove to be accurate within a very small margin of error.

I also find a note on January 4, 1960, indicating that the cost of production estimated for the industry as a whole was about $82.00 per metric ton f.o.b. The market level prevailing at the beginning of this year in the principal European markets was about $104.00, as compared with the present price level of about $82.00, cost and freight, which shows a drop of $22.00 for approximately 20%.

During the same period of time, the cost of production has also dropped approximately $22.00 per ton, most of which is obtained by a drop in the price of fish. The obvious difference is that the producer has been running all year to reduce his cost, but the market has declined at the same rate as the decline in cost. The producer, therefore is standing exactly where he was a year ago in the relation of cost to market. The sad fact is that today there is very little fat to chop off the industry to further reduce cost.

The reduction industry therefore is face to face with a real crisis as the current market level of $58.00 or $59.00 net to the producer, f.o.b., is more or less his cost; and most of the industry has no forward sales on their books. At the same time, one large speculator is reportedly short Peruvian fish meal to the tune of some 100,000 to 150,000 tons for delivery in 1961.

● The industry has been contemplating ways and means of confronting the problem and one proposal is to form a consortium which would embrace all or almost all of the producers. As this is written, the details of forming this group have not been completed but it is supposed to start operations early in 1961. The objective would be to channel all sales through this company to avoid speculation. The secondary purpose would be, of course, to avoid competition among the producers themselves. Tied to this proposal is financing, which is supposed to be arranged through a group of foreign and domestic banks at lower rates of interest than prevail locally.

The flaw in this proposal seems to lie in the fact that there is no recognition of the problem of overproduction and no provision is made to limit production. The pitch goes something like this: There are no accumulated stocks in the consuming countries and therefore, while the production of 500,000 tons in Peru in 1960 may appear excessive, there is room really for 600,000 tons of production by Peru in 1961. This is simply so much nonsense, as the market level speaks for itself. In other words, demand increases at an arithmetical rate whereas production here has increased at a geometrical rate and until such time as the supply and demand curves come closer together, we are going to have depressed markets. It could be that 1961 will be the year in which decreases in production here and elsewhere will bring this about; and while it will be a very difficult year financially, it may mark the beginning of a stabilized market for fish meal.

● As regards to the canning industry, virtually every canner in Peru in the 1959-1960 season ending June 30, 1960, lost money. In analyzing the reasons, it appears that there was unnecessary price competition in the European markets with the Japanese. In addition, the marketing methods used by the Peruvian canners were left much to be desired, as they competed with each other to the point where all hope of a profit disappeared and it became largely a question of reducing losses wherever possible. At this writing, the prospects for the 1960-1961 season appear brighter because of two reasons.

First, the production of Skipjack in Japan in 1960 has been relatively very poor. There has been an increase on

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the world market for canned tuna in oil, which has enabled the Peruvian industry to increase prices on summer pack and the European market has turned heavily to this country for supplies.

Second reason is that the Peruvian canners, as a group, have begun to exchange information regarding production, inventory and sales and to work together to avoid needless price competition. The industry started the new season July 1, 1960, with virtually no unsold stocks on hand and for the first time in their history were able to sell an appreciable part of the expected production in advance of the packing season. All factors therefore have combined to maintain prices at a steady and even higher market, as prices were advanced September 1, 1960. The bonito fishing season in Peru started late this year, during the second half of October. Fishing during November and thus far in December has been exceptionally good. Not withstanding the good fishing, the canners have been hard pressed to maintain shipping schedules in view of the previous heavy sales. It is obvious that the demand for canned tuna is increasing steadily in Western Europe.

PERU FISH EXPORTS

(First 6 Months only; data in metric tons)

	1960	1959
FROZEN		
Tuna	4,094	7,210
Skipjack	4,440	1,643
Shrimp	67	25
Swordfish	85	57
TOTAL FROZEN	**8,686**	**8,935**
CANNED		
Bonito	7,534	7,727
Tuna	261	420
TOTAL CANNED	**7,795**	**8,147**
BY-PRODUCTS		
Fish meal	285,503	123,580
Fish Oil	13,180	6,926
Sperm Oil	5,281	4,031
Whale meal	308	1,825
TOTAL BY-PRODUCTS	**304,272**	**136,362**
TOTAL FISH	**320,753**	**153,444**

There are no good governmental sources for statistics on production. The government sources do provide export statistics, which I suppose are within the usual margin of error. In any event, the best informed industry sources calculate 1959 exports of canned bonito at 1,489,000 cases divided among the following markets: United States, 809,000 cases; Germany, 186,000 cases; England, 182,000 cases; Canada, 118,000 cases. This totals approximately 1,295,000 cases with the balance going to miscellaneous destinations. Production by the canners for the season ending June 30, 1960 is calculated at 1,225,000 cases. The apparent discrepancy between production and exports, while it is partly a matter of difference in the period covered, is explained in all probability by the fact that the canners during the first half of 1960 cleaned up their backlog of unsold stocks and had minimum inventories at June 30, 1960.

PERU FISH EXPORTS

(Quantity in metric tons)

	1959	1958
FROZEN FISH:		
Tuna	17,466	9,808
Skipjack	7,928	6,073
Swordfish	347	335
Shrimp	88	228
TOTAL FROZEN	**25,829**	**16,444**
CANNED FISH:		
Bonito	16,745	12,541
Tuna	776	888
TOTAL CANNED	**17,521**	**13,429**
BY-PRODUCTS:		
Fish meal	277,600	105,777
Fish oil	17,165	1,643
Sperm oil	10,004	7,352
Whale meal	3,317	1,695
TOTAL EXPORTS	**351,436**	**146,340**

● As regards the collateral industries, we estimate that approximately 200 purse seiners were built and launched in the calendar year 1960. One construction yard went broke. This yard has now converted to a repair yard only. One of the most interesting operations is building a 60′ steel hull designed by Marine Construction & Design Company of Seattle. These people built and launched 44 steel hull vessels during 1960 or a rate of a little less than one vessel per week. They presently have the intention of building purse seiners equipped with spray type refrigeration for use in the bonito Fishery. These vessels will measure apparently 66′ overall by 21′ beam and will sell for approximately $65,000.00 complete with hydraulic winch system, spray system of refrigeration, etc. They are designed to have a capacity of 90 metric tons under refrigeration in the hold.

After June 30, 1960, there was a notable decline in the number of new contracts placed for fishing vessels. With the pressure on the price of fish meal, the price of fish inevitably declined and independent boat owners found in many cases, that it was no longer profitable to invest in fishing vessels. At the same time, however, we understand that there are a number of reduction plant operators who build new construction, which is intended to replace some of the independent boats fishing for these companies.

At the beginning of 1960, the price of fish to the independent boats was in the neighborhood of 200 soles per metric ton. As 1960 draws to a close, the price of fish has dropped to the independent boats to an average of 160 to 180 Soles. Most of the reduction plant operators are no longer willing to contract the fish price for the season and it is expected that further declines will take place in the price of raw fish as the pressure is felt on the fish meal price.

A substantial but unknown percentage of nylon anchovy netting is now manufactured in the country. There has been an interesting development also in the initiation of nylon nets, both imported and domestic manufacture for gillnetters. The reports indicate that nylon gillnets are proving to be quite satisfactory and are reducing costs in the production of table fish for fresh consumption.

● While I cannot give you any statistics, the amount of machinery fabricated locally for use in the fish meal industry has soared by leaps and bounds. Dryers, cookers, pressers, cyclones, and in fact, almost all types of machinery with the exception of centrifuges are now manufactured locally.

There has been a very heavy demand for centrifuges, both DeLaval and Sharples and to a lesser extent, the Swedish centrifuge, Titan. Another interesting development has been the importation from Italy of wine presses, manufactured under the trade name, Titano, who I believe have a plant in Torino, Italy. This is a lightly constructed press which sells for the equivalent of about $5,000.00 c.i.f. and which has a capacity of about 10 metric tons of fish per hour. The Atlas people of Norway and Denmark have sold, I believe, three solubles plants for use in the manufacture of so-called full meal. This is fish meal with the dried solubles added back. Two of these plants are being installed in Callao and Chimbote and I believe a third is going into the port of Supe.

● In brief summary: 1960 marked the year in which Peru moved into the big leagues, becoming the fifth largest fishing country in the world, thanks largely to its reduction plant industry. The prospect is that 1961 will be a year of consolidation and quite possibly, lower production as supply is adjusting to fall more in line with demand. There have been innumerable visitors in 1960 from all parts of the world, including representatives from other fisheries countries, buyers, brokers, salesmen, and assorted experts of every description.

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CHILE

• Chile, which stretches narrowly along the Pacific coast of South America for almost 3,000 miles, apparently has more shore-line in proportion to its total land area than any other nation. Her off-shore waters teem with countless varieties of fish and shellfish suited by the wide range of climates within the 37 degrees of latitude crossed by Chile's shoreline.

Chile is now making a promising start toward realizing the potentialities of her fisheries. Beginning at the base, which is the fishing fleet, the Republic is encouraging the importation and the building of modern, well-equipped fishing vessels and the training of skilled, productive fishermen.

An American firm, Marine Construction & Design Co. of Seattle, Wash., now has in operation three steel 50-ton vessels equipped with purse-seine and trawling gear and also with electronic fish-finding and navigation aids. Most important, with the vessels came expert fishermen who are undertaking to train Chilean fishermen in modern methods. As this is written the operation is an experiment, but when the experiment is finished a few months hence, Chileans will have practical information on which to base a promising fishing business.

• Working with Chilean interests, Marine Construction & Design Co. is also building Astilleros Iquique (Iquique Shipyards), which will build steel vessels to begin bringing Chile's fleet up to date.

In this hopeful start, Chileans also have the help of the United States Operations Mission and of their own recently-formed *Corporacion del Fomento de la Produccion* (Production Development Corporation), a government agency which last March announced a four-point program: (1) establishing services to help new fishing enterprises get started; (2) building a fish wharf at Iquique; (3) credit for new and expanding fishing enterprises to buy new or replacement equipment; (4) guaranteeing foreign credits obtained by Chilean fishing firms. *Corfo* also intends to invest about US$3,000,000 in a new fish processing plant at Iquique—this last not without some industry opposition, it being felt that a more immediate need exists for fishing vessels rather than processing facilities, there being now idle facilities that could be put to work if there were boats in the water to catch and deliver fish.

• At present, fish meal is the biggest single factor in Chile's fishery industries. Revised figures issued by the Ministry of Agriculture last September showed that Chile had produced in 1959 30,673 metric tons of meal as against 18,779 metric tons in 1958—an increase of 63% which experts said was mainly due to a better catch of anchovy, mostly in northern Chilean waters. The US led the list of export customers, taking 5194 of the 13,650 metric tons sold abroad:

Chilean Fish-Meal Exports, 1959

Destination	Metric Tons
U.S.A.	5,194
Netherlands	3,327
Germany	3,321
Venezuela	1,016
Belgium	491
Mexico	300
Bolivia	1
Total	13,650

Fish oil production, the Ministry of Agriculture reported, was 1131 metric tons in 1959, an increase of 412 tons or 57% over the 719 tons produced the previous year. Of the total, 58 tons were exported, 51 tons to Italy and 7 to the U.S.A.

With the meal industry taking so much of Chile's total catch, it is not surprising that anchovies are the leading species caught. The total 1959 catch was 272,514 metric tons, in which total are included shellfish as well as fin fish. This, as reported by the Chilean National Statistical and Census Service, was 20% over the 1958 catch, the difference being mostly in a bigger catch of anchovies in the northern part of Chile.

Chilean Total Catch by Years
(Metric Tons)

Year	Fish	Shellfish
1953	87,075	19,663
1955	169,725	44,605
1956	141,796	46,529
1957	157,413	55,780
1958	171,861	53,946
1959	228,440	44,074

• Chile's coastline is divided into eight fishing districts: Iquique, Antofagasta, Coquimbo, Valparaiso, San Antonio, Talcahuano, Valdivia and Puerto Montt, from north to south. In 1959, the leader was Iquique with its big harvest of anchovies. A close second was Talcahuano, well to the south — so Chile's fishing riches are not confined to any one part.

Among the shellfish, the principal product is frozen langostinos or salt-water crawfish, which are marketed as lobster tails. This delicate and delicious food has been making good progress as an export item, against strong competition from other parts of the world. For a gourmet item, it has had good reception in New York, London and more recently California.

Landings of langostinos, reported by the Bureau of Commercial Fisheries, jumped to 28,300,000 lbs. in 1958 from 25,100,000 in 1957 and 12,000,000 in 1956. Exports to the U.S have built up to 1,000,000 lbs. in each of the years 1957 and 1958, from 441,423 lbs. in 1956 and a beginning of about 5000 lbs. in 1955. Figures quoted are from U.S. Customs records.

Chile also cans quantities of sardines, mackerel, bonito and tuna. In the canning branch of the industry, according to credible observers, the need is for better quality and a lower price. The consumption of fish

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among Chileans is increasing gradually, against difficult obstacles such as shortage of refrigerating equipment to hold and transport fresh fish, and overall shortage of fish itself.

• Chile has a growing whaling industry, which in 1959 broke its catch record with a bag of 2,620, mostly sperm whales, according to a report from Santiago quoted by the Bureau of Commercial Fisheries. The 1957 catch was 2512. According to incomplete figures, the 1960 production of whale and sperm oil was expected to reach 8,600 metric tons, of which 200 are expected to be exported and the balance used at home; preliminary figures for 1959 are 8,400 production, 260 exports, balance home consumed; for 1957, revised figures show 7800 tons produced, 120 exported.

The world weakness in fish-meal prices has of course affected Chile's fishing industry, and will no doubt result in weeding out some of the less efficient operations. In the past few years, fish-meal plant managements made money in spite of inefficiency because the Government permitted them to sell the gold currency they got from their customers, on the free money market at considerably more than the official exchange rate. When the Government cut off this subsidy, the less efficient plants saw their money profits diminish. But in the world fish-meal business, Chile has one great advantage: an apparently inexhaustible source of raw material handy to the processing plants. With good management, Chile should be able to hold up its end in almost any kind of a world market.

• From the city of Concepcion south, Chile's fishing industry suffered a sore blow when the coast was struck by a sea-quake and tidal waves so massive that they caused serious damage as far-north as Los Angeles.

Although the damage in several fishing villages was extensive — in some villages even total — there was little damage to the heavier industrial installations, because those are almost all located north of Concepcion. The destruction in the south was mostly of small boats. Piers survived the tidal waves which followed the sea-quake and rose as high as 12 ft., because piers in that part of the world are built well above high water.

On the bright side, Chilean correspondents of *Pacific Fisherman* had very kind things to say about the aid sent to devastated areas by the U.S. and other friendly nations. Funds for reconstruction have been made available by the Corporacion de Fomento (Corfo) and by the Point Four people and other agencies.

DOMINICAN REPUBLIC

• In 1958, the people of the Dominican Republic imported 6,410,865 kilograms of fish (14,103,903 lbs.). In the first three months of 1959 imports came in at the rate of 7,344,124 kilos (16,157,073 lbs.) per year, an increase of 11% over the previous year's rate; and 1958, in turn, had seen a rise of 10% over 1957.

The Dominican government, expressing a desire for greater production of Dominican-caught fish and a correspondingly greater consumption of fish, specially by the lower income groups, requested the US Operations Mission to carry out a survey of the possibilities of commercial fishing in Dominican waters.

The results of the survey, carried out by Messrs. Robert O. Smith and Patrick H. Ramsey, were interesting.

Dominican fisheries, at present, the survey found, can hardly be called commercial fisheries at all. They are better described as subsistence fishing with a little bit left over for the neighbors. The bulk of the fishing is done by 12-16′ long vessels propelled by oar or sail. Some of these could be equipped with outboard motors, but far from all. None have refrigeration. It seems, therefore, that for the Dominican fishermen to establish even a small-scale commercial fishery, it would be necessary to start at the bottom and build a fleet of more seaworthy, farther-ranging small boats capable of mounting an outboard motor and with an insulated hold for transporting fish.

Most fishing is done by traps and beach seines, and even these simple devices are not, in the Dominican Republic, of the most efficient construction. Beach seines are mostly made of tarred cotton webbing, which is heavy and awkward, and in operation let a good many fish escape. The traps are home-made and bulky, so not many can be carried on one small boat.

• The Dominican navy has three fishing vessels of its own. These are Gulf of Mexico shrimp trawlers and are incapable of fishing with hook and line, purse seining, or any other way than shrimp trawling. The Navy boats therefore fish with traps, and while their catch is not what you would call commercial, nevertheless it is sufficient to help stabilize the retail price of fish, as the survey points out.

Prospects for trapping, trawling and hook-and-line fishing on the Silver Bank north of the island are good, the survey says, but vessels fishing those grounds should be equipped with depth finders, radios and direction finders if possible.

It seems indicated that the best start for the Dominican Republic to make in increasing domestic consumption of fish is to develop her inland fisheries, increasing the stocks and catches of fresh-water fish and crustaceans.

Dominican Imports of Fish, in Short Tons
(Source: US International Co-operation Administration)

	1959)(Jan.-Mar.)	1958	1957
Salt/Dried	1233.8	4353.2	3543.7
Fresh / Refrigerated	3.2	14.5	11.2
Smoked	587.8	2170.8	2268.5
In Brine	5.3	11.6	22.3
Canned	189.6	501.8	462.4
TOTAL	2019.7	7051.9	6308.1

• In most Latin American nations, there is a national need for a greater consumption of fish because of national shortages of meat and poultry. In the Dominican Republic, the survey indicates, this does not seem to be so. While the demand for fish is substantially greater than the supply, the supply of meat and poultry also is good, and prices seem to be reasonable.

One way of counteracting the growing importation of dried and salted fish would be to establish a Dominican salting, drying and smoking industry. By far the greater part of imports are in bacalao, which is salted codfish—a dish in high favor not only among the poor but among gourmets and connoisseurs of fine Spanish food. The survey suggests that a perfectly acceptable substitute for bacalao can be made by salting shark meat, which can be caught in Dominican waters and salted at a comparatively low cost.

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SOUTH AFRICA and S. W. AFRICA

By **PETER HJUL**

- The two associated fishing industries of South Africa and South West Africa in 1960 experienced the best of three outstanding fishing years. When the final figures for the bottom trawl catch are added to the record total for pelagic shoal fish, landings in 1960 along the 2,000 mile coastline should be close to 900,000 short tons. This total adds another 100,000 tons to the record landings of 1959, and is about 800,000 tons higher than the previous record in 1958.

Although the average of landings during the past five or six years places South Africa-South West Africa (separate industries but combined for statistical purposes) about 12th in total landings and production, this area has climbed to sixth place among the world's *exporters* of fish products. In 1959, according to the International Trade Edition of the FAO Yearbook of Fishery Statistics, the quantity of South and South West African exports of fresh, frozen, smoked, dried, salted and canned fish, frozen rock lobster tails, fish liver oil, fish meal and fish body oil, and whale oil rose a substantial 44,600 tons above the 1958 total to 218,100 metric tons. This was exceeded only by the exports of Norway, Japan, Peru, Canada and Denmark. The value of these exports—equal to 49,640,000 dollars — was passed only by Japan, Canada, Norway, Denmark and Iceland. In this same year South and South West Africa was the world's second exporter of fish meal and of pelagic fish oil; and it was the third exporter, after Japan and Portugal, of canned fish. While the international fish trade has grown by 100% since 1948, that of South and South West Africa has increased more than 900%.

NOTE — Mr. Hjul is editor of The South African Fishing News and Fishing Industry Review. For the second successive year Pacific Fisherman's International Yearbook Number has been privileged to publish Mr. Hjul's authoritative review of the fisheries of South and South West Africa.

South Africa's fishing season starts with a Harvest of the Sea festival. New-built in 1960, **Oom Ben** is 69.5′ in length and powered with a 240-hp. Deutz diesel. Capable of carrying above 150 tons of fish, she is typical of the modern South African vessels fishing "shoal" fish.

- By far the largest contributor to this huge increase in both production and exports, is the pelagic shoal, or "school," fishing industry based on the pilchard, maasbanker and mackerel of the Cape West Coast and the pilchard of Walvis Bay in South West Africa. These are relatively confined fisheries, extending along less than 200 miles of coast in the Cape and a much smaller area in South West Africa, and the catch is processed by a mere 14 factories in the Cape and six at Walvis Bay.

For three years these factories and the boats serving them have enjoyed seasons of amazing abundance—298,854 short tons landed in the Cape and 252,556 tons at Walvis Bay in 1958; 342,776 tons in the Cape and 301,696 tons at Walvis Bay in 1959; 423,524 tons in the Cape and 310,000 tons at Walvis Bay in 1960.

From its 1960 catch the Cape fishery produced 90,204 short tons of fish meal and 6,080,281 gal. of fish body

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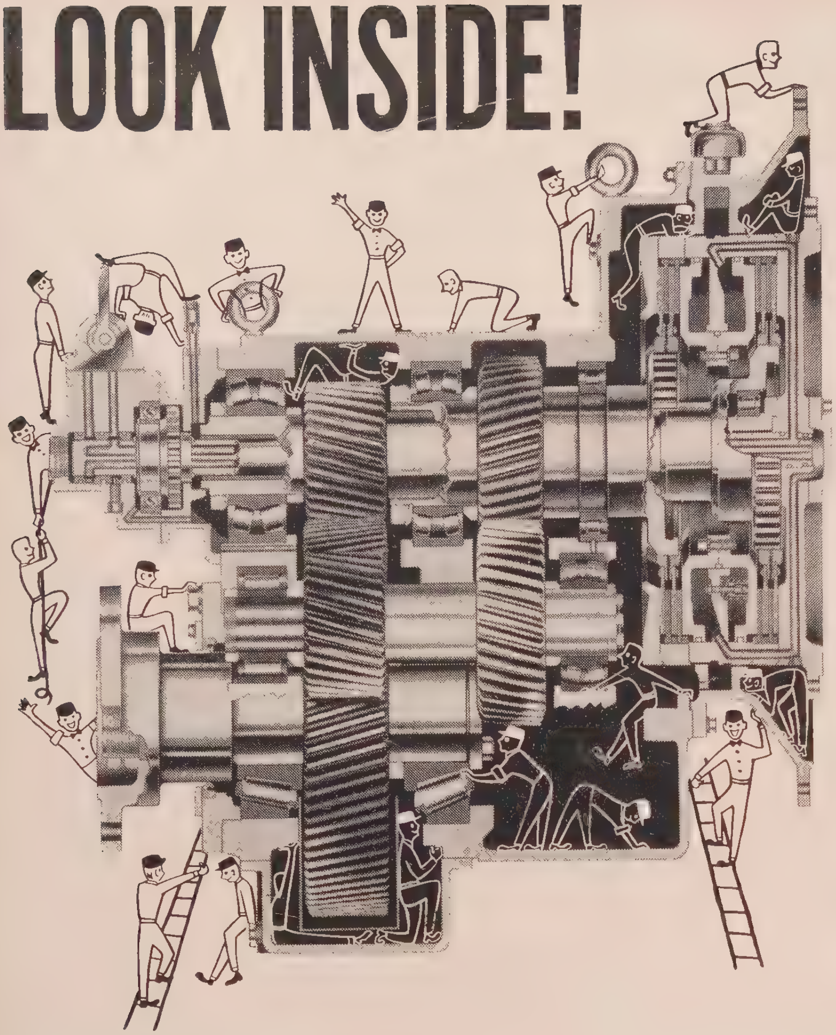

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oil; the Walvis factories produced 55,150 short tons of meal and 14,905 tons of fish body oil. Each of these two products was marketed through a single organization formed by the industry — the South African Fish Meal Producers' Association, and the South African Fish Oil Producers' Association. Controlled by boards fully representative of the producing companies and maintained by a full-time staff, these Associations operate as a form of industry co-operative. They handle the entire production of the factories, pursue a vigorous and progressive marketing policy, and, by offering a quality product through a single supplier, have built up steady marketing outlets in Britain, the European Continent, America and the Middle East.

Although remote from these markets, Southern Africa is blessed with good, regular shipping services, and these, coupled with consistently high production, have enabled the meal and oil industry to meet every contract it has undertaken. This marketing system has been of great value during the difficult months of 1960. The entire 1960 production of fish body oil, and the anticipated production of 1961 has been sold. Despite the depressed state of the fish meal market, the industry exported most of its 1960 meal and sold the rest locally; and 60% of the anticipated 1961 production has been sold in advance.

But the decline in fish meal prices to an uneconomic level below the real value of the product, hit South and South West Africa as it has hit the other major producers. Higher production in 1960 made up some of the loss from the fall in price, but the drop in normal export earnings was estimated at over $3,000,000. Like other big exporters, therefore, the industry is anxious to see some stability return to the meal market, and it has taken an active part in efforts to achieve this. Commenting in December, 1960, the Chairman of the S. A. Fish Meal Producers' Association, A. Shapiro, said he had originally believed that over production, coupled with disorganized marketing, had been the main disruptive factor in the international market. He was now convinced that the decline was due almost entirely to disorganized marketing. "In these closing months of 1960," he said, "there are no substantial unconsumed stocks of fish meal. This year's production has been sold, but fluctuations in supply, with overabundance alternating with comparative scarcity, have badly upset prices."

He and other South African producers feel that, if exporters could agree to maintain a stable flow, it

South Africa pilchard cannery and reduction plant on the Cape west coast of Africa.

would assist them and buyers, who have also been adversely affected by the unreliability of the market. At the Paris meeting in September, 1960, of the International Association of Fish Meal Manufacturers, South and South West Africa agreed in principle with four other major exporting countries to maintain a quota of the total 900,000 metric tons of meal expected to be required by the importing countries in 1961.

● Partly as a result of the fish meal price drop and partly because of the very good condition of the 1960 pilchards, canned fish production last year rose to 29,984,227 lb. in the Cape, and to a remarkable 226,246,752 lb. at Walvis Bay. From an average of 12 to 18% of fish sent to canneries in previous years, Walvis factories last year canned 25 to 30% of their raw fish intake. Markets for this output have, despite political boycotts of South and South West African fish in Ghana and Malaya, been generally good and the record production has been sold without much difficulty.

● Apart from the big increases in production and exports, there were few major developments in factories and boats in 1960. At Walvis Bay, where the fish are taken within three to 30 miles of the factory jetties, a fleet of 80 vessels was more than adequate through the year. The catch there is restricted by an intake quota for each factory, a total for the six factories of 250,000 tons from 1952 to 1958, 300,000 tons in 1959, and 310,000 tons in 1960. Each year the quota has been reached without trouble, and the yield is so consistent that the factories are able to plan their production and usually keep themselves operating for all but two or three months of the year.

The 14 Cape factories are not so fortunate. The fish has moved south in the past three or four years and all but two factories are 60 to more than 150 miles from the best fishing waters. This has stimulated the building of larger and larger vessels until the private owner has been more or less priced out of business. Today most of the £25,000 vessels built for the fishery are for factories.

Although one large steel vessel, the 70′ long "Jakob S.," with a transom stern and a beam of 24′, was built in 1960, wooden vessels will probably predominate in new construction for some years to come. However, another company has ordered two steel boats similar in design to the "Jakob S," and their performance may have considerable influence on future construction.

A feature of the South African boat is its high engine power and, in the latest vessels, its wide beam. A good example of this trend is the 69½′ long "Duineveld" with a 23′ beam and powered by a Caterpillar diesel developing 290 continuous h.p. With this beam and power, the boat travels 100 miles and more for her fish at a speed of about 10 knots; she works a modified lampara-seine net of synthetic fibre, 160 fathoms long and up to 25 fathoms deep; she can take a load of more than 150 tons on deck and in her hold; and she returns to the factory with this catch at near top speed.

In the Cape and Walvis Bay fishermen and boatowners have exacting requirements for their engines, electronic equipment and nets. With up to 30 new boats built in a year and many others re-engined, the market is a good one for suppliers, but they have to offer full servicing facilities, and a new make of engine has to demonstrate its reliability for some time before it is generally accepted. The rugged American marine diesels, especially Caterpillar and GM, have been very successful in this area; other popular makes are the British Kelvin and the German Deutz. The B & W Alpha engine, with controllable pitch propeller, also sells well and is being used extensively in motor trawlers.

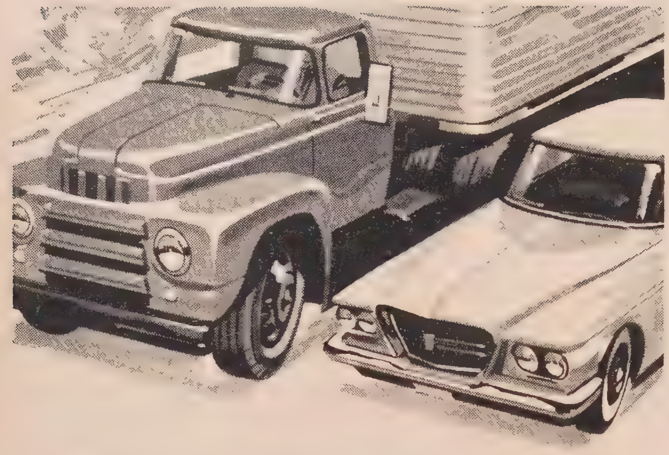
To operate closer to the fishing grounds two large fish meal factories have been erected at Hout Bay, a beauty spot and residential area about 10 miles from Cape Town. These factories are strongly resented by residents in the area and considerable effort has had to be put into neutralizing odours from the reduction process.

With the assistance of the Fishing Industry Research Institute they have put up two different types of vapor scrubbing tower which have been a success and have drawn enquiries from factory operators in built-up areas in Europe and elsewhere.

● Although the Cape fishery is still subject to a catch restriction to conserve the resource, this has changed from a flat 250,000 tons a season to the amount caught between the beginning of January and the end of July each year. As a result some 150 boats, representing an investment equal to about 10,000,000 dollars, are idle for two months and are only partially employed in November and December when maasbanker and mackerel fishing is permitted.

Fishermen and boatowners have, therefore, shown much interest in the Japanese long line method of tuna fishing, which has been tested by a 70′ motor trawler and the 70′ long research vessel *Kunene* over most of this year. Knowledge of the extent and the habits of the local tuna resource is still sketchy, but there are indications of substantial commercial quantities through most of the year.

In her tests the *Kunene*, a Government-owned vessel, has been using a



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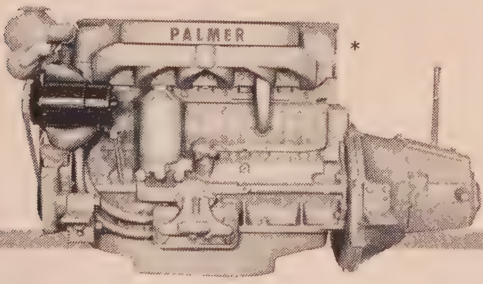

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one mile long line of 3/16" Kuralon in five baskets, each with six hanging lines. On this small scale the vessel has taken 25 and more fish to 100 hooks; tests on a larger scale from the trawler have been similarly successful.

One typical good result was obtained by *Kunene* in a two-day fishing period in oceanic water (temperature 17°C.) 60 miles west of Cape Town. The first shot was made at daybreak, this operation taking 10 minutes. After periods of 45 to 60 minutes the hooks were hauled in. The line was shot seven times over the two days to give the equivalent of 210 hooks which caught 53 tuna weighing a total of 3,840 lb. Included in the catch were 15 Big-eye tuna (weighing an average of 100 lb. each), Albacore and Bluefin. The fish ranged from 40 lb. to 179 lb. in weight.

To encourage similar attempts by fishermen, the *Kunene* took some of the leading skippers to sea during last year's off-season. It is believed that the South African pelagic shoal boat is well designed for this type of fishing, and at least three commercial operators have been testing long line gear.

● While most of the spectacular fishing results have been in the pelagic shoal fishery, the rock lobster boats and factories have had two improved seasons. This shellfish, which is caught by small nets usually close inshore, provides the frozen rock lobster tails which are popular in the United States and earn about $10,000,000 a year for the industry. These earnings dropped in 1958 when exports fell to a low 4,278,695 lb., but they rose in 1959 to 7,180,785 lb. and were expected to maintain or even better this total in 1960.

In the bottom trawling industry, a significant development has been the increase in the number of small motor trawlers operating along the South African coast and concentrating on the catching of soles. Some of these boats are small wooden vessels—45 to 60′ long—converted to work trawling gear with a synthetic fibre net. But 14 larger steel-hull vessels have also been built in two Cape Town shipyards. Ten of them are 70′ long boats—powered by B & W-Alpha engines with controllable pitch propellers—for South Africa's main trawling concern. This company also operates more than 40 larger steam trawlers based mainly in Cape Town. Early in 1960 it had a 360-ton, 128½′ long motor trawler built in a British yard, and it is now taking delivery of a sister ship. It is expected that motor vessels of this type will steadily replace the steam trawler in South African waters.

South African Pilchards are unloaded in modern manner using a Yoemans fish pump of U. S. manufacture.

In 1959, for the seventh successive year the bottom trawling industry, established a new record for total landings: the increase of 10,000 tons over 1958 to 113,341 short tons was the highest in any single year for the period since 1952.

Like other sections of the thriving fishing industry of South and South West Africa, the trawling industry has been quick to use the latest improvements in fish catching and processing techniques. Not only does it maintain an extensive distribution system—with 20 depots in South Africa and the Rhodesias—for its fresh fish, but it has also moved substantially into fish processing. Today a trawler catch landed in Cape Town may be railed up country in special insulated wagons; it may be distributed by insulated and refrigerated road trucks through the Western Cape; it may be smoked in one factory or dried or salted in another; it may go to the largest frozen foods plant in the country for processing to frozen fillets or fish sticks; or it may be canned into one of the specialty lines developed by the industry. In addition, the offal from fish cleaned aboard the trawlers goes for reduction into white fish meal, and livers from the big hake catch are processed to give Vitamin A oil.

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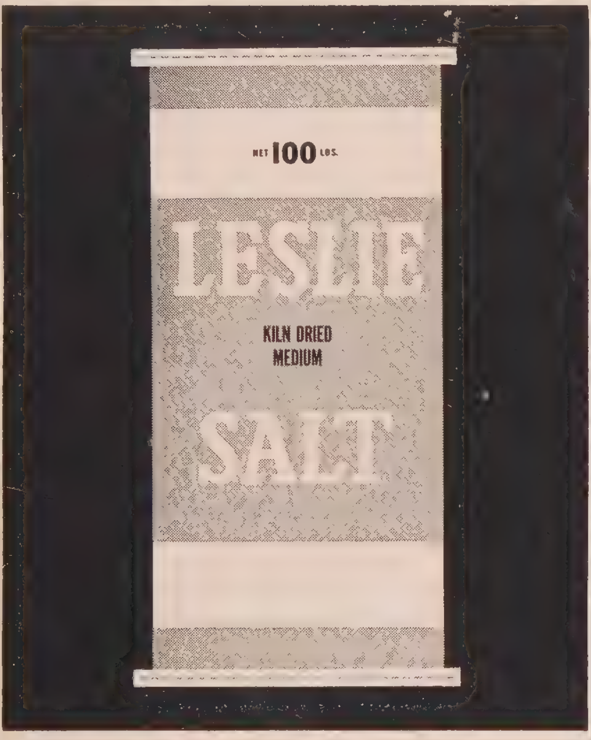

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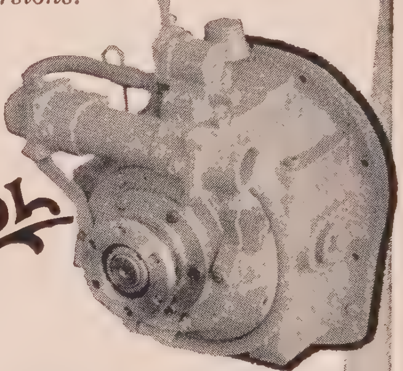

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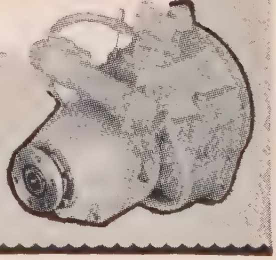

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GHANA

• Ghana, which traditionally has been a foremost factor in the utilization of the fisheries of the Gulf of Guinea, moved strongly in 1960 toward the mechanization and modernization of its fishing industry, essentially for the direct benefit of its people; but indirectly for the development of export trade based on a resource which hitherto has served solely for subsistence.

The government of Ghana has moved determinedly along both of these lines and at the end of 1960 could measure definite progress.

Of the population of Ghana it is estimated that 5% derive their living from the fisheries in one manner or another; but it is the objective of the government of Ghana to increase this percentage substantially through more active utilization of the very large marine resources lying along the Gold Coast.

Present day market value of the Ghana fish catch is estimated at U.S. dollars $6,450,000.

Two ports, Tema and Elmina, are being developed as fishing centers, where both the local market and export packing will be centered.

Tema already is a leading commercial harbor and a fishing port is being developed in connection with it. The expectation is that it will be complete in 1961; while that at Elmina will not be finished until perhaps a year later.

• Ghana has provided for industrial and biological studies of its ocean fisheries and an inquiry into their industrial development possibilities under a contract with Star-Kist Foods, Inc., of Terminal Island, California. Results of this investigation, which were carried on largely through the operation of the tuna clipper *Columbia,* are expected to result in the development of refrigeration facilities for packing tuna for export and also eventually in the development of a cannery designed to pack sardines and other small fish for domestic consumption or the African trade.

The Ghana governmental fishery program also involves the manufacture of edible fish meal as a high protein food for the use of the people of the country and their neighboring states, thus achieving perhaps the highest possible economic return from fish suitable basically for reduction.

• Ghana's fishery resources of volume and concentration sufficient for industrial purposes apparently consist of two types: a form of herring or sardine which are abundant and found in very large quantities; and schools of tuna, apparently largely of the Yellowfin variety, which appear to be available off the Gold Coast throughout most of the year. It might be mentioned that it is in a band lying along the Equator, and thus not far from the east and west running coast of Ghana, that the Japanese longliners have found productive tuna fishing.

To study the domestic fishery trade, the government of Ghana arranged for the services of John L. Dibbs of Australia, a fishery marketing specialist of the Food & Agriculture Organization of the United Nations, to conduct a 2-year investigation.

This has resulted in recommendations for improved facilities and modernization of existing ones for handing the catch fresh and accelerating its distribution to the population of the Ghana coast, and also well into the interior. The development of retail markets in population centers inland from the coast is among the projects counted upon to increase the use Ghana is able to make of its fishery resources.

In commenting on the situation in Ghana at the conclusion of his mission there in 1960, Mr. Dibbs said:

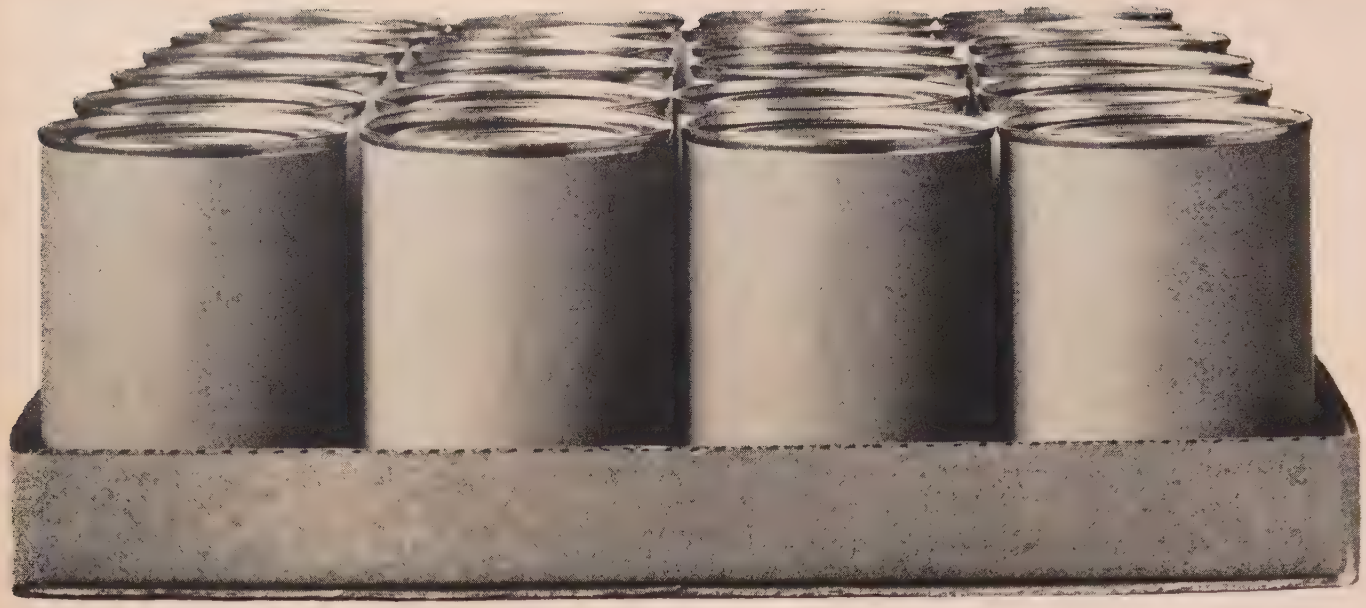
"Although Ghana yearly catches fish valued at more than U.S. $6.000,000, the country still imports from overseas and across territorial lines more than an equal amount of fish. It is the main and cheapest source of protein for many residents of Ghana. While prices fluctuate considerably, during the herring season they drop to a level where anyone in the country can afford fish.

"The Ghana government has a very sound and far-sighted policy for its fisheries to meet the country's need and to develop an export trade. Already there are 160 small mechanized vessels in use and the government plans to launch a loan scheme to help fishermen put outboard motors on their small fishing craft. It is also planned to develop the industrial side of the fishing industry by building a cannery, an edible fish meal plant, and a large freezing plant which can handle tuna for export."

Morocco Fish Products Exports

(January through July of years shown, in metric tons)

	1958	1959	1960
Fresh Fish	4,770	6,965	7,655
Fish Meal	11,686	7,474	3,370
CANNED FISH			
Sardines	12,526	13,975	14,174
Tuna	1,504	1,508	1,092
Other	542	1,245	2,348
	31,028	31,167	28,639



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AUSTRALIA

By R. M. FOWLER

● In South Australia, fishing for many years has been concentrated on crayfish, shark (types for human consumption) and all classes of ordinary table fish. However, recently the tuna industry has come to the fore and now appears to have a considerable future.

The real impetus to tuna fishing started about five years ago when the South Australian government brought out the two well known American fishermen, the Jangaard Brothers. They came here for two specific objectives:

1. To tell us whether we had the potential to develop a tuna fishery.
2. To teach our fishermen how to catch tuna.

Both these objectives were achieved. They reported we had the fish; and they successfully taught our fishermen how to catch these fish. The results have been:

1957 . . . 258 tons   1958 . . 604 tons
1959 . . . 769 tons   1960 . . 1536 tons

In 1957 the catch was made by two vessels, in 1958 by three vessels, in 1959 by five vessels and in 1960 by seven vessels.

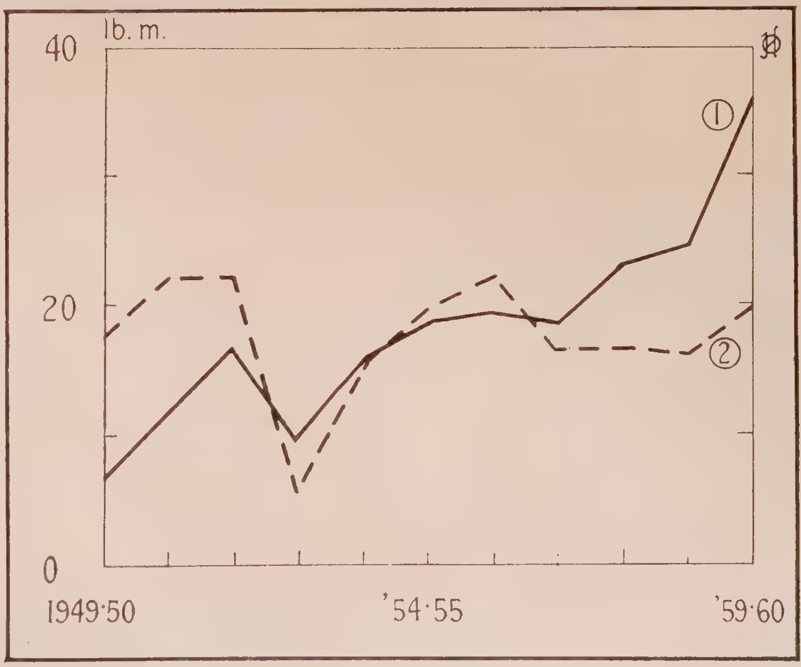
The tuna caught in this State is commonly called Southern Bluefin (Thunnus Thynnus Maccoyii) and this tuna is apparent all round the southern half of Australia and also in the Indian Ocean; and it is also believed there are stocks of the same tuna off the New Zealand coast.

The method of fishing taught to our fishermen by the Jangaards, was the well known live bait fishing, and 99% of our landings have been caught in this way and the same applies to the tuna fishing in New South Wales. Live bait are available in our waters, but at certain times are very difficult to locate and catch, and when this happens then of course it holds up our tuna catch and probably in the future something will have to be done to ensure that our tuna fleet has a continual and dependable supply of these small fish; otherwise too much time will be lost out of the very short season in South Australia, which is roughly between January and May, while the New South Wales season is from September to December.

● The bulk of the fleet is of the smaller type of boat and in fact the biggest in use so far is only about 85′ and can carry about 60 tons under brine refrigeration. However, there are very few of this class of vessel and mainly the fish is caught by vessels of from 40′ to 60′ in length capable of carrying in ice between 15 and 25 tons. Up to the present time fish-

EDITOR'S NOTE—Mr. Fowler is the general manager of the South Australian Fishermen's Cooperative Limited, with headquarters in Adelaide, South Australia. He is recognized among his country's leading authorities on commercial fisheries and their development.

Australian Imports of Canned and Frozen Fish



—Data from Fisheries Division, Commonwealth of Australia

1. Fresh or frozen fish imports into Australia
2. Imports of canned fish

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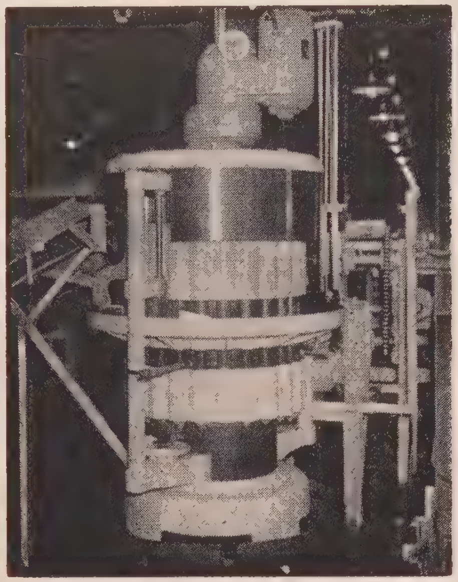

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TERRY TARABOCHIA, Captain of Gillnetter *"BALLERINA"* reports: "My Starr Net was very successful on *Humpies* in 1959. We increased our catch at least 50 per cent over other years when I fished with other nets. You just can't beat STARR NYLON NETTING for fishing."

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Another in a new series of Starr advertisements direct from the fishermen using Starr Nylon Netting.

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ing this size vessel has been possible because our tuna are so close to shore that in good fishing times these vessels can fill up during the day and either be in port to unload the same night or at the latest, the next morning.

However, the present tendency is to concentrate on the larger vessels carrying up to 60 tons under refrigeration so that the vessel can stay at sea until full and then bring her cargo into port. With the smaller vessel they very often have to come into port with say 5 tons, and very likely lose the next day's fishing, which may be good, and as the weather on the fishing grounds during the season is far from good, the vessels cannot afford to be in port on any of the good fishing days.

Unfortunately, up to the present, very little is known about the stocks of Australian tuna and their movements and therefore we have these two very short seasons; and until more is known about these tuna, it is very difficult to assess whether the larger type of American tuna clipper would be successful in Australia. However, some of our fishermen already believe that the time has come for the larger clipper to chase the tuna over larger areas and thus prolong our seasons.

- At the present, the South Australian tuna industry is based in Port Lincoln, the main town on Eyre's Peninsula, about 120 miles by air from Adelaide, the capital of South Australia, and 430 miles by road from Adelaide. Most of the tuna here is caught within 100 miles of Port Lincoln and is mainly one day catches, therefore is of first class quality. The larger vessels that stay out longer are all brine refrigerated and they too are landing first class quality fish.

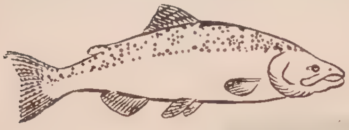
The industry was held up for many years because of the doubt and uncertainty of the market for tuna in Australia. This has gradually changed over the years until today the Australian demand for tuna is good and is very rapidly rising. Messrs. Green's Products Limited, who own the two tuna canneries in New South Wales, have been mainly responsible for this as they have spent large sums in advertising and educating the Australian public into eating canned tuna. Then the advent of the South Australian Fishermen's Co-Operative Limited, (SAFCOL) into the industry in 1957 gave a further push until today the sales of canned tuna in Australia are running at record figures.

In addition, SAFCOL during the 1960 season exported some 700 short tons of frozen tuna to the U.S.A. This of course had been tried before, but because of various difficulties at that time, had not been an economic success. However, SAFCOL overcame these difficulties and were in the fortunate position that Port Lincoln is a deep water overseas port and therefore was able to ship for export from the same port as the fish was landed. This is essential to the success of exporting frozen tuna as it is not economically possible to freight the frozen tuna to another port for shipment. This frozen tuna, exported both in the round and gilled and gutted form, was well received by the American canners, who are now anxious to receive further supplies. However, the present position would appear to be that the Australian market demand for tuna is growing so rapidly that it is doubtful if there will be any great tonnage available for export until the total Australian catch is greatly increased.

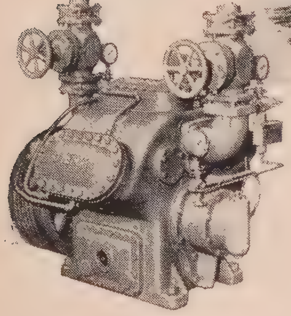
There is no doubt that Australia has the tuna round most of its coastline and it is now really only a question of getting the catching power, whether in large or small vessels will depend on the federal government doing the necessary scientific investigation to establish where the fish are and at what time of the year they are in different locations. Also, as the catch increases the shore installations must be improved to handle the increased catch. One of the biggest difficulties on shore is getting the necessary freezing accommodation. It is obvious that with such a short season, it is not really an economic proposition to install large freezers which are only really going to be used three months each year. Therefore once again, if the season can be extended this solves the freezing problem. SAFCOL are fortunate in Port Lincoln in that the South Australian government have a large abatoirs in the town and all the freezing accommodation in this establishment is not used for meat products during the South Australian tuna season and this has up to the present allowed SAFCOL to freeze all the fish being caught without having to stop the vessels fishing. However the tuna fleet preparing for the 1961 season is now capable of catching more tuna than the present freezing capacity can cope with. This of course means that the fleet or catching power cannot really grow until more freezing accommodation is available. SAFCOL

South Australian Bluefin tuna coming aboard the tuna clipper **Tacoma,** fishing out of Port Lincoln. The vessel was named **Tacoma** because it was from that American city that her owner secured her plans, after reading in **Pacific Fisherman** about that city's eminence in fishing vessel construction. Australian Bluefin are uniform in size and high in quality.

Alaska Salmon held to perfection aboard Theo E using Vilter refrigerated sea water



The Theo E, one of a number of vessels owned and operated by Norman Holm, is equipped with a sea water chilling system using a Vilter VMC compressor and condenser. Hold capacity of the Theo E is 95,000 pounds.



A view of a typical Vilter VMC ammonia compressor. Available in 2, 4, 6, 8, 12 and 16-cylinder sizes. Vilter VMC compressors supply maximum capacity in a minimum of space.

An increasingly popular method of removing heat from fish is the use of chilled sea water in place of regular icing. The sea water prevents air from surrounding the fish and affords little opportunity for oxidation of the fish surfaces . . . flavor and freshness are preserved. This chilling system also results in more production per boat and reduced labor costs.

Among the sea water chilling installations aboard ship in the Puget Sound and Alaskan area is the *Theo E,* a vessel owned and operated by Norman Holm of Seattle. On the *Theo E,* sea water passes through a chiller where it is cooled and then circulated in the brine tanks to protect the catch. The chiller is located in the main tank and is regulated to provide a constant 29-degree temperature. It can bring a full cargo down to this temperature within 14 hours.

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are planning on a maximum catch of 2,500 tons during the 1961 season as it is estimated that this is all the fish that can be frozen in the short period. If this quantity of fish is caught it will probably mean that vessels at the height of the season will be stopped fishing for short periods, while the freezers are being cleared.

• This freezing problem will of course be largely overcome if we eventually use the larger type of fishing boat which freezes her catch at sea. One of the main reasons why freezing at sea has not been developed yet is that the boats do not stay long enough away from port to justify freezing the fish. This in itself creates the difficulty that the time the fish is on board the vessels, from the time of catching to unloading, is normally not long enough to allow the boats to completely freeze the fish as obviously they do not want to sit in port freezing fish when every fishing day is so valuable. However, in the South Australian 1961 season, if there are many of the larger class of vessel fishing then some of these vessels will have to freeze their fish otherwise the shore freezing facilities will not be able to cope.

One of the latest developments in South Australia is a new vessel built for Bert Wilson, one of the leading tuna fishermen. Mr. Wilson has designed this vessel very cleverly and although it is only a 60′ boat, it is expected to carry 40 tons of tuna and of this total, some 30 tons will be held in brine refrigeration. In addition this boat has been designed to give lots of deck room for landing and handling of the fish and it will be very interesting to see how successful this boat is during the next season.

• The present marketing position for tuna in Australia is extremely good from the fishermen's point of view. The Australian market is crying out for canned tuna and with the very bad season so far in New South Wales, there are literally no stocks left to sell and even if New South Wales have a heavy late run of tuna, there will be no difficulty at all in selling all of this. Then during the South Australian season, SAFCOL will have to can a great deal more tuna than in the previous season, as the Australian market will easily consume this increase. This means that unless the South Australian catch is greatly increased there will be very little frozen fish available for export to America. The amount available for export will actually depend on the increase in the catch, how much extra the shore freezing can cope with and the possibility of some vessels freezing their catch at sea.

BRAZIL

● While the federal government of Brazil has been taking various exploratory steps toward developing the nation's vast resources of shrimp and tuna, the coastal state of Sao Paulo, showing a progressive spirit rare among political subdivisions of Latin American nations, is proceeding in what seems to be an orderly and systematic way, to develop its own state fisheries.

Sao Paulo borders the state of Rio de Janeiro; its capital, Sao Paulo Brazil's second-largest city. Just a few miles south of Sao Paulo is Santos, where the Brazilian federal government has been operating a fish depot for about three years. The state government is purchasing the depot, and adding it to a state string of similar establishments along its coast line.

There are state-owned ice plants and cold storage warehouses at Ubatuba and Itanhaem, and new ones are being built at Sao Sebastiao, Ilha Bela, Iguape and Registro which, with the Centro de Abastecimento (Supply Center) near Santos, will give Sao Paulo a total fish storage capacity of over 5,000 tons.

● So much for the immediate practical side. Two years ago, Sao Paulo set up its fishery biology service at Santos, with scientists from the Oceanographic Institute, University of Sao Paulo, and the federal department of Agriculture studying marine creatures of the Brazilian coast. An FAO technician helped in setting up the lab.

The main concern of the scientific studies now under way is finding the most effective methods of catching fish without destroying the resource. This is being done in thorough style, the studies including classification of species, and study of the habits of the fish and the conditions of their ocean habitat. At the same time, the state is carrying on a pilot-plant canning study on local sand smelts, and is considering financing the purchase of some modern vessels.

● After rather a rough career, the Japanese-Brazilian tuna fishing enterprise that had been operating off Brazil last Fall went through a reorganization that put the entire operation and investment in the hands of the Japanese. The vessels will fish under licenses from the Brazilian administration, ten vessels having applied.

Previously, there had been complaints that the vessels, instead of landing their cargoes in Brazil as agreed, were landing them in Trinidad; that Brazilian fishermen were being hired as apprentices and then dismissed when they qualified as full-fledged workers; and that the boats were continually switched to avoid having to register them under the Brazilian flag. Before the reorganization, a Brazilian inspector was being placed aboard each foreign fishing vessel.

The tuna business in Brazil represents not only a promising source of supply but a good market. Consumption is said to be around 15,000 tons a year, and showing an upward trend.

● Besides the growth in Sao Paulo province, two new significant plants have been recently completed in Brazil: A general processing plant at Maracana, just south of the Mouths of the Amazon, and a whaling station in the northern part of the state of Rio de Janeiro. The International Whaling Commission in London, reported by the US Bureau of Commercial Fisheries, said the new Brazilian plant would turn out about 390 blue-whale units annually, operating from May to November.

The Maracana plant has a canning capacity of 100,000 cans a day, and freezing capacity of 132,000 lbs. of fish, plus equipment for processing Newfoundland cod. It was said to have cost close to half a million US dollars, part of which was contributed by the Brazilian government.

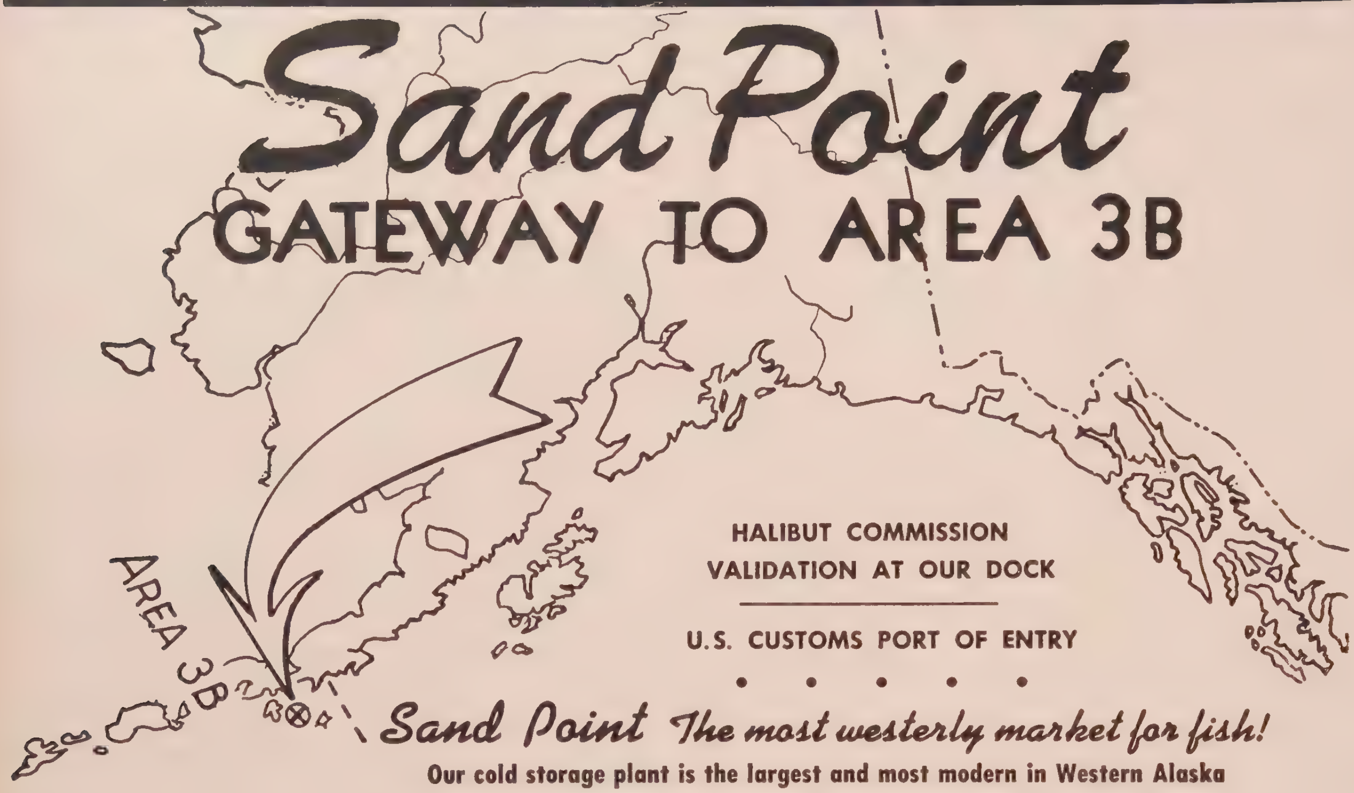
The shrimp industry in Brazil is held back by a lack of adequate fishing vessels and freezing facilities. In 1958, according to a Bureau of Commercial Fisheries report, Brazilians landed 18,557 metric tons of fish (1 metric ton equals 2200 lbs.); in 1957 landings were 20,667 and in 1956, 17,305 metric tons.

Prices paid fishermen for shrimp are unstable and vary from day to day, partly because the Brazilian monetary unit, the cruzeiro, is itself far from stable. Prices have varied in the past year from the equivalent of 11.4 US cents a lb. for smaller sizes to around 45.5 US cents a lb.

The greater part of Brazil's shrimp crop is consumed within the republic, some sold fresh. a little frozen, and the surplus dried and salted. Exports amount to very little.

Exports of spiny lobsters to the US from Recife broke a record in April 1960 (usually an off month) with a total of 50,236 lbs.

There is also some production of fish meal and oil in Brazil. In 1959 total production, as estimated by the US Embassy in Mexico City, was about 3891.5 tons, and 1960 production was expected to be about the same. Brazilian plants can't afford to pay the high prevailing prices for whole fish and consequently use mostly offal from the canning and freezing plants, so there seems to be little prospect for any expansion of the Brazilian meal and oil industry. In fact, Brazil was planning to import some fish meal from Peru. There is a rising poultry industry which will need fish meal for chicken feed, and there is also a ready-made national market for fish oil in the tanneries which now use about all the oil available in Brazil.



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HALIBUT

- By the narrowest of margins—less than 100,000 out of almost 72 million pounds—the combined halibut fleets of the United States and Canada in 1960 established a new catch record for the international fishery which they share under the management of the International Pacific Halibut Commission.

There are no data available for the catch of halibut by other nations in the northeastern Pacific.

Market offerings of halibut by Japan fell from around 2 million pounds in 1959 to apparent nil in 1960. USSR reported insignificant quantities taken.

- Taking 46.9% of the combined catch, Canada continued its growth trend, taking the largest catch in pounds in the history of its participation in the fishery; and also the largest percentage of the total catch.

One of the significant aspects of the 1960 season was the decrease of catch in Areas 3A and 3B inspite of the increased fleet operating there; and the rise in Areas 2A, 2B and 2C despite the reduced fleet.

To Westward the decline — which after all was less than 1 million pounds — resulted from the reduced abundance which followed the extremely heavy fishing found in portions of the areas in 1959. Both Areas 3A and 3B shared in the decline to a closely comparable degree. The catch in Area 3B held narrowly above 10 million pounds for the second successive year.

- Fleet operation pattern resulting

Pacific Halibut Catch by Areas and Nationalities

YEAR	– Pounds –											YEAR
	AREA 1	AREA 2**			AREA 3**			TOTAL American	TOTAL Canadian	GRAND TOTAL		
	American	American	Canadian	Total	American	Canadian	Total					
1932	902,271	16,026,631	5,960,640	21,987,271	21,146,037	451,761	21,597,798	38,074,939	6,412,401	44,487,340		1932
1933	722,254	14,880,259	7,649,400	22,529,659	22,887,941	637,672	23,525,013	38,490,454	8,286,472	46,776,926		1933
1934	1,541,258	13,360,103	9,004,714	22,364,817	22,829,989	726,658	23,556,648	37,731,350	9,731,372	47,462,722		1934
1935	*1,489,294	13,112,709	8,954,740	22,067,449	22,532,977	1,251,314	23,784,291	37,134,980	10,206,054	47,341,034		1935
1936	708,301	13,865,731	8,696,865	22,562,596	23,717,665	1,887,788	25,605,453	38,291,697	10,584,653	48,876,350		1936
1937	709,752	13,445,575	9,852,348	23,297,923	23,551,917	1,912,966	25,464,883	37,707,244	11,765,314	49,472,558		1937
1938	706,316	13,737,819	9,571,461	23,309,280	22,820,005	2,623,208	25,443,213	37,264,140	12,194,669	49,458,809		1938
1939	1,072,675	13,466,002	10,913,035	24,379,037	22,761,120	2,552,125	25,313,245	37,299,797	13,465,160	50,764,957		1939
1940	779,036	14,395,547	11,101,558	25,497,105	25,396,243	1,582,314	26,978,557	40,570,826	12,683,872	53,254,698		1940
1941	332,259	13,332,247	10,609,166	23,941,413	25,590,281	2,350,333	27,940,614	39,254,787	12,959,499	52,214,286		1941
1942	285,621	14,046,982	9,147,146	23,194,128	24,903,636	2,054,745	26,958,381	39,236,239	11,201,891	50,438,130		1942
1943	419,944	13,740,543	11,116,583	24,857,126	26,569,949	1,790,540	28,360,489	40,730,436	12,907,123	53,637,559		1943
1944	318,689	14,957,704	11,149,714	26,107,418	24,782,581	2,190,459	26,973,040	40,058,974	13,340,173	53,399,147		1944
1945	529,000	13,230,000	11,750,000	24,980,000	25,665,000	3,551,000	29,156,000	39,364,000	15,301,000	54,665,000		1945
1946	605,000	14,068,000	14,451,000	28,519,000	27,067,000	4,058,000	31,125,000	41,740,000	18,509,000	60,249,000		1946
1947	406,000	10,387,000	17,175,000	27,562,000	20,869,000	7,081,000	27,950,000	31,662,000	24,256,000	55,918,000		1947
1948	283,000	13,273,000	14,203,000	27,476,000	23,276,000	4,453,000	27,729,000	36,832,000	18,656,000	55,488,000		1948
1949	426,000	12,461,000	13,588,000	26,049,000	23,433,000	5,158,000	28,591,000	36,320,000	18,746,000	55,066,000		1949
1950	335,000	12,594,000	14,115,000	26,709,000	25,413,000	4,769,000	30,182,000	38,399,000	18,884,000	57,283,000		1950
1951	314,000	14,426,000	16,191,000	30,617,000	20,318,000	4,829,000	25,147,000	35,058,000	21,020,000	56,078,000		1951
1952	391,000	13,355,000	17,133,000	30,488,000	23,868,000	7,586,000	31,454,000	37,614,000	24,719,000	62,333,000		1952
1953	238,000	14,442,000	18,060,000	32,502,000	19,447,000	7,678,000	27,125,000	34,127,000	25,738,000	59,865,000		1953
1954	674,000	19,165,000	17,574,000	36,739,000	23,841,000	9,952,000	33,793,000	43,680,000	27,526,000	71,206,000		1954
1955	650,000	15,717,000	13,027,000	28,744,000	20,595,000	9,121,000	29,716,000	36,962,000	22,148,000	59,110,000		1955
1956	604,000	20,291,000	15,121,000	35,412,000	21,014,000	10,475,000	31,489,000	41,909,000	25,596,000	67,505,000		1956
1957	446,000	16,261,000	14,365,000	30,626,000	19,934,000	10,349,000	30,283,000	36,641,000	24,714,000	61,355,000		1957
1958	357,000	15,505,000	15,053,000	30,558,000	20,433,000	13,865,000	34,298,000	36,295,000	28,918,000	65,213,000		1958
1959	236,000	16,575,000	14,229,000	30,804,000	24,010,000	16,665,000	40,675,000	40,821,000	30,894,000	71,715,000		1959
1960	257,000	16,554,000	14,995,000	31,549,000	21,293,000	18,705,000	39,998,000	38,104,000	33,700,000	71,804,000		1960

NOTE: 1960 figures of the International Pacific Halibut Commission are preliminary and subject to further correction. In data for 1951 and thereafter Area I includes the catches from Areas 1A and 1B and Area 2 includes the catches from Areas 2A, 2B and 2C. In data for 1952 and thereafter Area 3 includes the catches from Areas 3A and 3B.

**Figures for Area 2 for 1937 and thereafter include halibut which were taken incidentally to cod fishing after the closure of Area 2, as allowed by regulations of the International Fisheries Commission for these years. Halibut so caught in 1957 was 706,000 lbs., and in 1958 was 437,000 lbs.

*This figure includes landings from Areas 1 and 4, as defined in the regulations for 1935. This amount should compare directly with the Area 1 catch of previous years, as it is not believed any fish were landed in 1935 from that portion of Area 4 which included Bering Sea.

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from the voluntary stay-in-port rules reacted against Alaska port deliveries and favored those to British Columbia in 1960.

Most significant regional shift was the strong rise in landings at Vancouver, while the landings of American fish at Prince Rupert again went above 1 million pounds after two years in which they were far below that mark.

Fishing operations in 1960 were long protracted as result of the fleet's sailing rules, and reduced abundance to westward, reflected in smaller catch per day and longer trips.

The United States market again proved highly attractive to the Canadian fleet, which delivered 3,257,000 lbs. of halibut in Alaska and 3,450,000 lbs. on Puget Sound for a total of 6,707,000 lbs. of halibut in Alaska and 3,450,000 lbs. on Puget Sound for a total of 6,707,000 lbs. This strongly reversed the trend of some years back, when American vessels frequently landed as much—and sometimes far more—halibut in Canada.

Perhaps the most significant aspect of this shift lies in the distinction between American landings in Canada, which primarily were sold for shipment in bond to the United States; and those of Canadian halibut directly to the United States, where the Canadian fisherman absorbs the duty.

The decrease in Canadian—and

SIZE OF HALIBUT FLEET

(INCLUDES REGULAR HALIBUT BOATS ONLY)

YEAR	UNITED STATES FLEET				CANADIAN FLEET				COMBINED FLEETS			
	Area 2	Area 2	Area 3	Area 3	Area 2	Area 2	Area 3	Area 3	Area 2	Area 2	Area 3	Area 3
	No. of Boats	No. of Men	No. of Boats	No. of Men	No. of Boats	No. of Men	No. of Boats	No. of Men	No. of Boats	No. of Men	No. of Boats	No. of Men
1943	247	1,037	107	942	162	767	3	24	409	1,804	110	966
1944	278	1,056	84	753	278	831	4	34	485	1,887	88	767
1945	316	1,253	97	837	175	867	3	26	491	2,120	100	863
1946	373	1,373	116	921	187	952	5	41	560	2,325	121	962
1947	350	1,302	119	887	215	1,168	5	40	565	2,470	124	927
1948	403	1,496	139	1,095	249	1,221	5	39	652	2,717	144	1,134
1949	374	1,452	149	1,134	225	1,153	5	41	599	2,605	154	1,175
1950	426	1,654	150	1,147	235	1,210	5	39	661	2,864	155	1,186
1951	394	1,574	148	1,091	270	1,346	8	66	664	2,920	156	1,156
1952	295	1,243	134	885	233	1,211	8	64	528	2,454	142	949
1953	273	1,147	139	883	229	1,151	20	159	502	2,298	159	1,042
1954	289	1,238	121	720	224	1,149	20	167	513	2,387	141	887
1955	281	1,209	122	698	189	959	25	203	470	2,168	147	901
1956	285	1,213	99	548	155	829	17	134	440	2,042	116	682
1957	351	1,402	110	595	171	859	27	206	522	2,261	137	801
1958	276	1,135	121	645	140	712	37	291	416	1,847	158	936
1959	239	978	125	693	139	675	51	394	378	1,653	176	1,087
1960	205	798	125	695	130	558	61	467	335	1,356	186	1,162

1960 - Halibut Arrivals at British Columbia Ports* - 1960

(Pounds)

MONTH	Prince Rupert Butedale+	Vancouver Namu	District No. 3 and Victoria	Total Canadian	U.S. Vessels at Prince Rupert	GRAND TOTAL
April	688,000	920,000	...	1,608,000	109,000	1,717,000
May	5,015,000	2,807,000	1,219,000	9,041,000	345,000	9,386,000
June	5,288,000	2,016,000	418,000	7,722,000	402,000	8,124,000
July	2,787,000	2,064,000	412,000	5,263,000	115,000	5,378,000
August	538,000	301,000	50,000	889,000	56,000	945,000
September	1,201,000	880,000	...	2,081,000	37,000	2,118,000
October	158,000	125,000	91,000	374,000	...	374,000
November	5,000	5,000	5,000	15,000	...	15,000
1960 TOTAL	15,680,000	9,118,000	2,195,000	26,993,000	1,064,000	28,057,000
Previous Years						
1959	15,587,000	6,345,000	1,887,000	23,819,000	318,000	24,137,000
1958	15,738,000	6,350,000	1,705,000	23,793,000	579,000	24,372,000
1957	14,758,000	6,205,000	1,340,000	22,303,000	1,869,000	24,172,000
1956	13,465,000	8,013,000	1,440,000	22,918,000	3,001,000	25,919,000
1955	12,393,000	5,628,000	1,830,000	19,851,000	2,751,000	22,602,000
1954	15,289,000	6,712,000	3,252,000	25,253,000	4,126,000	29,379,000
1953	17,894,000	4,979,000	1,774,000	24,647,000	1,989,000	26,636,000
1952	19,275,000	2,662,000	1,653,000	23,590,000	3,006,000	26,596,000
1951	15,717,000	2,819,000	1,923,000	20,459,000	4,381,000	24,840,000
1950	15,237,000	1,689,000	1,888,000	18,814,000	3,684,000	22,498,000
1949	13,745,000	2,129,000	2,189,000	18,063,000	4,205,000	22,268,000
1948	13,665,000	2,641,000	2,172,000	18,478,000	2,479,000	20,957,000
1947	17,868,000	4,298,000	1,819,000	23,985,000	2,585,000	26,570,000
1946	15,117,000	2,023,000	896,000	18,036,000	4,378,000	22,413,000
1945	11,606,000	2,340,000	1,163,000	15,109,000	4,571,000	19,680,000
1944	8,457,460	3,604,517	1,218,985	13,280,962	5,444,672	18,725,634
1943	6,381,348	5,155,435	1,331,575	12,907,123	12,337,126	25,018,553
1942	5,910,928	4,035,866	1,104,459	11,201,891	13,415,795	24,467,048
1941	8,625,079	3,139,021	1,014,192	12,959,499	10,033,720	28,812,612
1940	9,310,667	1,999,314	1,002,401	12,683,872	11,210,740	25,632,122
1939	9,904,289	3,018,504	445,500	13,465,162	9,319,026	22,687,319
1938	8,619,526	2,794,557	586,619	12,194,669	7,324,178	19,343,390
1937	9,026,372	2,333,370	377,796	11,765,314	7,015,057	18,773,489
1936	8,619,526	2,054,167	899,200	10,584,653	6,205,377	16,772,209
1935	7,636,704	2,246,196	349,300	10,206,054	6,927,581	17,159,781
1934	7,946,499	1,513,273	271,600	9,731,372	8,591,983	18,323,355

*Does not include landings by Canadian vessels in Alaska of 3,257,000 in 1960; 4,100,000 in 1959; and in Washington of 3,450,000 in 1960; 2,975,000 in 1959.

+Includes landings from minor British Columbia ports.

NOTE: 1960 figures of the International Pacific Halibut Commission are preliminary and subject to further corrections.

1960 - Halibut Fleet Landings at Seattle

MONTHS	TRIPS	HALIBUT, DRESSED											
		Chicken		Medium		Large		No. 2 Medium		No. 2 Large		TOTAL	
		Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value
April	18	22,300	$ 3,400	893,800	$ 166,000	137,400	$ 30,000	47,800	$ 6,900	3,100	$ 700	1,104,400	207,000
May	93	233,200	35,000	3,067,900	544,900	1,228,100	232,100	175,000	23,700	28,200	4,200	4,732,400	839,900
June	93	417,300	63,300	2,601,000	471,300	1,142,500	229,000	190,500	26,400	39,400	6,400	4,390,700	796,400
July	68	288,000	43,200	1,755,100	326,000	951,800	205,800	172,200	24,700	48,400	8,500	3,215,500	608,200
August	64	32,000	4,800	672,700	129,200	323,700	71,000	117,200	16,900	21,900	4,100	1,167,500	226,000
September	76	128,000	19,200	566,100	119,600	123,800	29,000	21,900	3,700	1,000	200	840,800	171,700
October	67	7,000	1,000	164,900	37,400	67,100	15,400	11,900	2,000	1,600	300	252,500	56,100
November	20	...	...	24,700	6,200	...	...	...	...	...	...	24,700	6,200
Total	499	1,127,800	169,900	9,746,200	1,800,600	3,974,400	812,300	736,500	104,300	143,600	24,400	15,728,500	2,911,500

1960 PACIFIC HALIBUT CATCH-AREAS 2 and 3 by Months

(Pounds)

MONTH	AREA 2*			AREA 3*			TOTAL		
	U. S.	Canada	Total¶	U. S.	Canada	Total	U. S.	Canada	Total¶
April	----	----	----	2,186,000	2,874,000	5,060,000	2,186,000	2,874,000	5,060,000
May	5,142,000	5,309,000	10,451,000	5,812,000	4,853,000	10,665,000	10,954,000	10,162,000	21,116,000
June	5,887,000	4,752,000	10,639,000	6,150,000	4,343,000	10,493,000	12,037,000	9,095,000	21,132,000
July	2,957,000	2,760,000	5,717,000	4,922,000	3,770,000	8,692,000	7,879,000	6,530,000	14,409,000
August	718,000	454,000	1,172,000	1,218,000	934,000	2,152,000	1,936,000	1,388,000	3,324,000
September	1,619,000	1,670,000	3,289,000	653,000	1,314,000	1,967,000	2,272,000	2,984,000	5,256,000
October	162,000	35,000	197,000	352,000	617,000	969,000	514,000	652,000	1,166,000
November	69,000	15,000	84,000	----	----	----	69,000	15,000	84,000
TOTALS	16,554,000	14,995,000	31,549,000	21,293,000	18,705,000	39,998,000	37,847,000	33,700,000	71,547,000

*Area 2 includes all grounds between Willapa Bay and Cape Spencer, and Area 3 all grounds west of Cape Spencer including the present Areas 3A and 3B.

§These totals include 490,000 lbs. of halibut which were taken incidentally to blackcod fishing in Area 2, as allowed by the 1960 regulations of the International Pacific Halibut Commission.

This table does not include the partially estimated amount of 257,000 lbs. landed from Areas 1A and 1B.

NOTE: 1960 figures of the International Pacific Halibut Commission are preliminary and subject to further correction.

Annual Catches of Halibut by Areas and Seasons

	*FIRST SEASON	SECOND SEASON	THIRD SEASON	INCIDENTAL PERMIT	TOTAL
AREA 1-A: SOUTH OF HECETA HEAD					
1954	411,000	...	...	7,000	418,000
1955	402,000	...	...	23,000	425,000
1956	430,000	...	...	...	430,000
1957	303,000	...	...	...	303,000
1958	168,000	...	...	...	168,000
1959	132,000	...	...	...	132,000
1960	141,000	...	...	1,000	142,000
AREA 1-B: HECETA HEAD TO WILLAPA BAY					
1954	100,000	58,000	...	39,000	197,000
1955	122,000	...	...	90,000	212,000
1956	132,000	...	...	42,000	174,000
1957	72,000	16,000	...	55,000	143,000
1958	175,000	...	...	14,000	189,000
1959	76,000	...	...	28,000	104,000
1960	76,000	...	...	39,000	115,000
AREA 2: WILLAPA BAY TO CAPE SPENCER					
1954	26,497,000	9,527,000	...	776,000	36,800,000
1955	22,203,000	5,302,000	...	1,156,000	28,661,000
1956	27,230,000	7,600,000	...	581,000	35,411,000
1957	25,658,000	4,262,000	...	706,000	30,626,000
1958	26,735,000	3,424,000	...	399,000	30,558,000
1959	27,692,000	2,583,000	...	529,000	30,804,000
1960	27,919,000	3,140,000	...	490,000	31,549,000
AREA 3-A: CAPE SPENCER TO SHUMAGIN ISLAND					
1954**	29,420,000	3,340,000	...	8,000	32,768,000
1955	27,399,000	1,458,000	...	...	28,857,000
1956	29,314,000	1,486,000	...	....	30,800,000
1957	28,892,000	...	...	...	28,892,000
1958	29,730,000	...	...	...	29,730,000
1959	30,257,000	...	...	...	30,257,000
1960	29,970,000	...	...	17,000	29,987,000
AREA 3-B: WEST OF SHUMAGIN ISLAND					
1954***	....	...	611,000	...	611,000
1955	....	...	933,000	...	933,000
1956	292,000	134,000	264,000	...	690,000
1957	1,391,000	...	...	...	1,391,000
1958	4,568,000	...	...	...	4,568,000
1959	10,418,000	...	...	...	10,418,000
1960	10,011,000	...	...	...	10,011,000

NOTE: 1960 figures are preliminary and subject to further corrections. *Includes poundage caught in contravention of the regulations of all seasons of the year. **Area extended west to Sanak Island in 1954. ***Sanak Island westward in 1954. Figures in pounds.

American also — landings in Alaska was doubtless due in considerable degree to the application of the stay-in-port-between-trips rule to the Area 3B operations as well as to those of the nearer grounds.

- Halibut prices were bitterly disappointing to the fishermen throughout the 1960 season. Even toward its close they failed to take the usual up-turn which is expected to follow the season's-end interest of the smaller holders of frozen stocks seeking to fill them out while yet there is time.

The second season in Area 2 fell somewhat short of developing expected fishing interest. This was due in part to the strong market for sablefish. The local boats which had gone sablefishing during the period between the regular season in Area 2 and the second short no-quota period were loath to leave-off fishing sable when it was bringing 19 to 20.2c—as much as medium halibut.

The exceptional market for line-caught sablefish generally was attributed to the eastern smoking demand for any fish which conceivably could be substituted for the mild cured salmon which had not materialized.

OREGON AND CALIFORNIA HALIBUT LANDINGS

1960

MONTH	California Pounds	Oregon Pounds
May	10,000	66,000
June	10,000	104,000
July	10,000	94,000
August	10,000	22,000
September	8,000	23,000
October	8,000	5,000
November	3,000	---
TOTAL	59,000	314,000

NOTE: 1960 figures of the International Pacific Halibut Commission are preliminary and subject to further correction, particularly California's which include chiefly estimation.

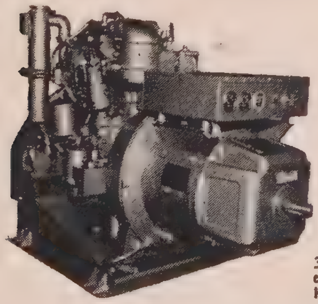
1960 HALIBUT ARRIVALS AT ALASKA PORTS * 1960

(Data in Pounds)

MONTH	Ketchikan	Wrangell	Petersburg	Sitka	Juneau	Pelican	Misc. S. E. Alaska	Central+ Alaska	TOTAL Pounds
April	643,000	...	...	36,000	...	...	...	1,111,000	1,790,000
May	1,838,000	237,000	1,245,000	329,000	704,000	559,000	166,000	1,163,000	6,241,000
June	1,989,000	284,000	1,449,000	451,000	733,000	789,000	208,000	1,449,000	7,352,000
July	1,123,000	103,000	810,000	284,000	428,000	489,000	27,000	1,399,000	4,663,000
August	153,000	14,000	108,000	77,000	65,000	54,000	5,000	592,000	1,068,000
September	257,000	26,000	312,000	51,000	115,000	76,000	...	1,148,000	1,985,000
October	254,000	...	22,000	12,000	8,000	3,000	...	109,000	408,000
November	9,000	..	5,000	10,000	8,000	5,000	...	...	37,000
1960 TOTAL	6,266,000	664,000	3,951,000	1,250,000	2,061,000	1,975,000	406,000	6,971,000	23,544,000
1959	9,443,000	773,000	3,384,000	984,000	2,367,000	2,232,000	434,000	6,701,000	26,318,000
1958	6,992,000	521,000	3,497,000	1,179,000	2,085,000	2,449,000	386,000	5,114,000	22,223,000
1957	5,741,000	660,000	3,703,000	1,359,000	2,364,000	1,879,000	327,000	3,835,000	19,868,000
1956	7,639,000	727,000	4,151,000	1,772,000	3,049,000	2,215,000	1,154,000	3,200,000	23,907,000
1955	3,811,000	298,000	3,393,000	1,040,000	2,679,000	2,621,000	397,000	5,026,000	19,265,000
1954	5,611,000	376,000	4,117,000	2,382,000	3,382,000	3,040,000	585,000	3,408,000	22,901,000
1953	4,823,000	368,000	2,847,000	1,662,000	1,706,000	2,829,000	214,000	3,625,000	18,074,000*
1952	7,696,000	430,000	3,022,000	2,023,000	2,645,000	2,244,000	139,000	2,661,000	20,860,000
1951	5,170,000	496,000	2,869,000	1,985,000	2,386,000	2,294,000	192,000	3,642,000	19,034,000
1950	6,992,000	479,000	3,140,000	3,103,000	3,823,000	3,351,000	75,000	4,372,000	25,265,000
1949	7,628,000	499,000	2,675,000	2,008,000	2,473,000	2,102,000	41,000	4,689,000	22,115,000
1948	7,700,000	716,000	2,548,000	2,990,000	2,797,000	2,362,000	114,000	4,742,000	23,969,000
1947	7,503,000	643,000	2,828,000	2,634,000	5,432,000**	...	...	3,389,000	22,429,000
1946	9,918,000	699,000	2,943,000	2,684,000	4,363,000**	...	...	2,279,000	22,886,000
1945	2,277,000	585,000	2,161,000	2,773,000	4,363,000**	...	...	2,221,000	20,887,000
1944	9,554,962	1,008,312	2,486,084	2,694,073	3,540,637	...	...	2,569,043	21,853,111
1943	7,450,730	727,157	1,936,825	1,691,697	2,289,947	...	...	...	14,096,356
1942	5,749,469	469,037	1,559,221	834,046	1,816,148	...	...	...	10,169,162
1941	3,367,567	375,135	1,463,801	2,173,697	1,616,928	...	...	...	8,998,580
1940	3,798,134	400,735	1,718,490	1,370,412	1,984,511	...	...	...	9,481,893
1939	2,263,927	279,660	1,460,190	931,557	2,001,999	...	...	...	6,897,208
1938	2,828,111	414,928	1,965,843	906,852	2,039,814	...	...	...	8,220,752
1937	3,642,996	590,834	1,352,807	893,602	1,832,533	...	...	...	8,646,993
1936	3,556,364	494,221	1,979,813	945,933	1,541,674	...	...	...	8,654,364
1935	3,752,488	112,060	474,672	667,811	1,341,864	...	...	...	6,538,114
1934	3,155,474	284,950	1,002,792	1,172,264	1,463,761	...	...	...	7,132,059

*Landings by Canadian vessels in Alaska included, which were 3,257,000 in 1960, 4,100,000 in 1959, and 2,886,000 in 1958.
+Port Williams, Seldovia, Anchorage, Sand Point, Seward and Cordova.

**International Pacific Halibut Commission tagging.
NOTE: 1960 figures of the International Pacific Halibut Commission are preliminary and subject to further correction.



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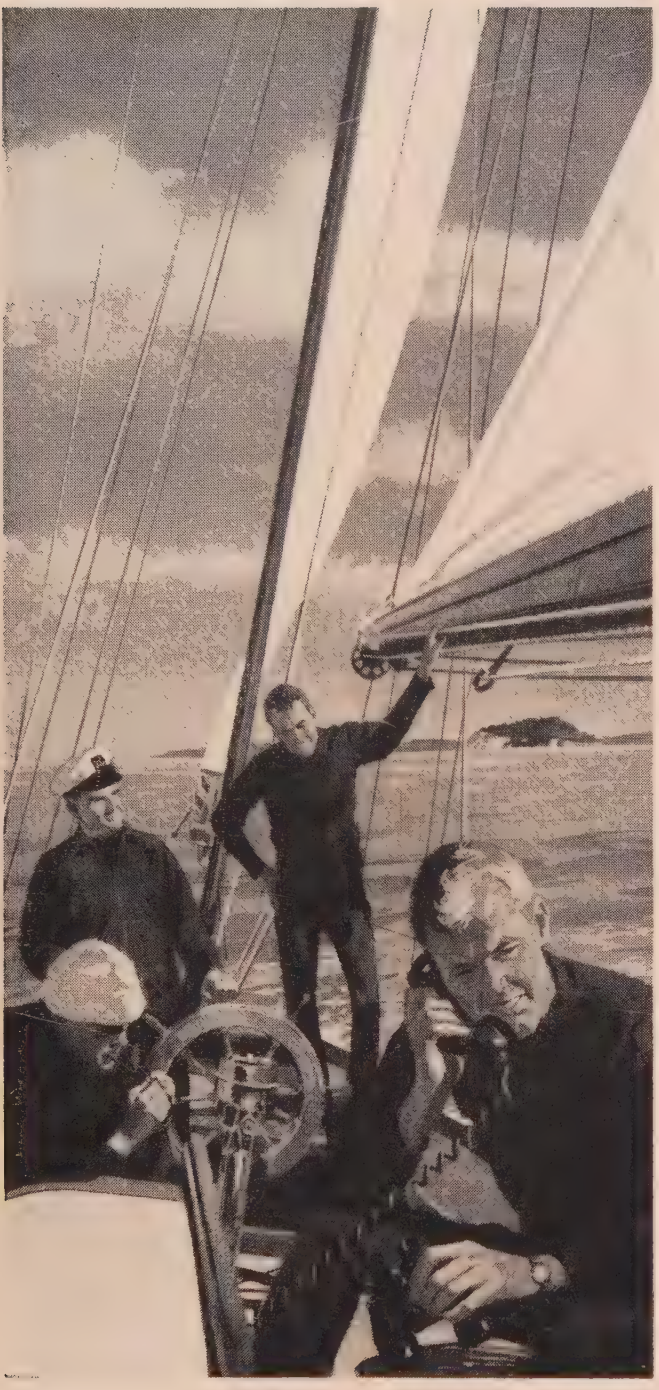

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1960 - Seattle Halibut Landings by Months and Varieties

MONTHS	Trips	HALIBUT NO. 1		HALIBUT NO. 2		LINGCOD		ROCKFISH		SABLEFISH		TOTAL	
		Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value
Dec. 1959	...	...	$ ...	...	$ ...	...	$...	...	$...	...	$ ...	...	$ ...
Jan. 1960	...	...	...	...	...	...	...	...	...	...	...	...	...
February	...	...	...	...	...	...	...	...	...	...	...	...	...
March	...	...	...	...	...	...	...	...	...	...	...	...	...
April	18	1,053,500	199,400	50,900	7,600	...	...	...	...	...	...	1,104,400	207,000
May	93	4,529,200	812,200	203,200	27,900	5,400	300	2,200	100	6,500	100	4,746,500	840,400
June	93	4,160,800	763,600	229,900	32,800	600	...	1,200	100	25,300	3,200	4,417,800	799,700
July	68	2,994,900	575,000	220,600	33,200	...	...	1,700	100	45,700	8,300	3,262,900	616,600
August	64	1,028,400	205,000	139,100	21,000	4,200	200	20,600	1,000	620,900	120,300	1,813,200	347,900
September	76	817,900	167,800	22,900	3,900	10,900	600	29,000	1,400	852,800	156,000	1,733,500	329,700
October	67	232,700	52,900	13,500	2,300	10,200	500	20,200	1,000	949,900	173,200	1,226,500	229,900
November	20	24,700	6,200	...	...	13,700	800	2,600	100	233.600	43,600	274,600	50,700
TOTAL	499	14,842,100	2,782,100	880,100	128,700	45,000	2,400	77,500	3,800	2,734,700	493,700	18,617,200	3,421,900
1959 Total	505	16,077,900	3,530,100	1,144,900	209,500	78,400	6,300	86,300	4,300	1,972,600	353,800	19,360,500	4,104,000
1958 Total	444	7,868,900	2,063,600	7,292,200	1,650,900	68,900	6,100	40,000	1,900	1,098,400	157,000	16,368,400	3,879,500
1957 Total	572	8,592,600	1,857,800	5,903,000	1,076,100	83,500	5,600	107,500	5,400	2,525,400	366,100	17,212,000	3,311,000
1956 Total	487	7,917,100	2,144,700	5,581,300	1,274,800	151,100	15,800	96,300	5,300	1,159,700	251,900	14,905,500	3,692,500
1955 Total	593	7,782,525	1,379,049	5,972,429	890,116	96,806	8,326	161,870	7,915	2,190,376	307,801	16,204,006	2,593,207
1954 Total	590	9,680,975	1,969,571	6,305,330	1,149,601	137,381	14,177	158,442	8,017	2,224,123	341,184	18,506,251	3,482,704
1953 Total	486	8,072,514	1,457,140	4,912,713	787,245	85,126	8,441	137,648	6,703	1,902,412	285,891	15,110,413	2,545,420
1952 Total	527	6,613,702	1,544,979	4,685,046	1,018,696	522,490	73,791	181,359	9,757	1,597,801	240,853	13,600,398	2,888,076
1951 Total	485	6,011,835	1,362,710	3,628,699	740,182	279,953	39,354	244,289	16,453	2,004,053	265,082	12,168,829	2,423,781
1950 Total	371	4,461,658	1,237,069	2,921,919	730,756	363,641	32,974	152,139	8,052	1,090,129	196,838	8,989,486	2,204,577
1949 Total	473	4,953,126	1,119,334	4,166,069	797,911	418,202	39,457	192,544	12,894	1,813,775	177,709	11,543,370	2,147,796
1948 Total	461	4,990,417	1,136,824	4,089,321	742,761	491,683	53,744	229,698	14,387	1,372,309	227,947	11,200,428	2,175,663
1947 Total	302	3,705,948	972,481	1,887,355	423,403	301,745	31,630	165,098	12,149	1,378,694	179,151	7,438,840	1,619,199
1946 Total	458	6,823,696	1,509,839	6,299,384	1,286,742	261,803	23,787	218,598	14,136	1,358,433	199,832	14,961,914	3,034,336
1945 Total	459	6,547,387	1,148,683	5,376,141	2,008,265	893,283	86,952	287,623	24,030	572,376	65,816	13,676,821	2,185,062

PACIFIC HALIBUT CATCH SINCE 1914

YEAR	Pounds										YEAR
	AMERICAN VESSELS					CANADIAN VESSELS				GRAND TOTAL	
	Seattle *	Prince Rupert **	Alaska	Oregon & California ***	Total American	Pr. Rupert, Butedale, etc.	Vancouver New Westm., Vanc. I., Namu	American Ports	Total Canadian		
1914	41,825,575	1,877,000	5,175,993	...	48,878,568	8,742,100	4,991,500	..	13,733,600	62,612,168	1914
1915	33,133,313	11,323,500	5,561,577	...	50,018,390	8,444,715	4,791,000	...	13,235,715	63,254,105	1915
1916	20,259,446	13,810,895	6,961,628	...	41,031,969	6,710,500	5,258,000	..	11,968,500	53,000,469	1916
1917	22,884,434	14,216,030	6,792,138	...	43,892,602	5,839,030	3,686,000	...	9,525,030	53,417,632	1917
1918	16,455,564	10,790,500	6,076,500	...	33,322,564	4,338,000	1,552,000	...	5,890,000	39,212,564	1918
1919	16,968,639	13,000,700	7,366,991	...	37,336,330	6,120,000	1,957,000	...	8,077,000	45,413,330	1919
1920	19,692,915	14,676,400	8,035,000	...	42,404,315	7,190,000	2,010,600	...	9,200,600	51,604,915	1920
1921	17,127,783	19,531,400	8,784,029	...	45,443,212	8,906,000	4,149,400	..	13,055,400	58,498,612	1921
1922	14,602,780	17,248,900	4,772,038	...	36,623,718	8,510,000	3,559,500	.	12,069,500	48,693,218	1922
1923	12,017,312	20,366,600	8,283,590	...	40,667,502	9,392,900	3,707,200	...	13,100,100	53,767,602	1923
1924	11,889,080	20,913,200	12,663,776	...	45,466,056	8,181,500	4,043,500	...	12,225,000	57,691,056	1924
1925	11,197,474	22,434,800	9,752,465	400,000	43,784,739	6,181,600	3,207,600	...	9,389,200	53,169,939	1925
1926	10,156,630	20,483,800	14,011,005	600,000	45,252,435	6,869,200	4,156,500	...	11,025,700	56,278,135	1926
1927	11,917,150	18,664,400	15,386,766	400,000	46,818,316	6,941,000	1,523,400	...	8,464,400	55,282,716	1927
1928	13,788,775	20,389,700	9,623,700	760,000	44,562,175	8,349,500	1,541,500	...	9,891,000	54,453,175	1928
1929	12,359,170	20,599,200	12,882,426	1,103,888	46,890,984	8,045,100	1,747,800	...	9,792,900	56,683,884	1929
1930	12,671,470	16,997,800	11,389,756	930,000	41,989,832	7,006,600	1,475,200	...	8,481,800	50,471,632	1930
1931	15,087,672	10,573,300	9,638,150	953,000	36,252,122	6,202,400	1,424,800	...	7,627,200	43,879,322	1931
1932	22,000,296	10,633,800	4,568,829	1,050,000	38,253,025	4,227,700	2,023,200	...	6,250,900	44,503,925	1932
1933	22,263,992	8,757,300	6,781,451	679,066	38,461,454	5,649,200	2,630,700	.	8,300,255	46,761,709	1933
1934	20,718,328	8,591,983	7,132,059	1,288,980	37,731,350	7,946,499	1,784,873	...	9,731,372	47,462,722	1934
1935	22,388,941	6,927,014	6,538,114	1,280,911	37,134,980	7,636,694	2,563,276	..	10,206,054	47,341,034	1935
1936	22,726,642	6,204,645	8,654,364	706,646	38,291,697	8,111,472	2,468,936	...	10,584,653	48,876,350	1936
1937	21,351,684	7,017,857	8,646,993	690,710	37,707,244	9,032,623	2,711,562	...	11,765,314	49,472,558	1937
1938	20,995,966	7,324,178	8,220,752	704,734	37,264,140	8,617,890	3,384,569	192,210	12,194,669	49,458,809	1938
1939	20,070,259	9,319,026	6,897,208	1,013,304	37,299,797	9,904,372	3,466,362	94,428	13,465,162	50,764,957	1939
1940	18,863,872	11,210,740	9,481,893	1,014,321	40,570,826	9,323,133	3,355,516	5,223	12,683,872	53,254,698	1940
1941	19,095,973	10,036,640	8,998,580	1,123,594	39,254,787	8,708,902	4,173,967	76,630	12,959,499	52,214,286	1941
1942	14,865,306	13,430,294	10,169,162	771,477	39,236,239	5,997,895	5,203,996	65,680	11,201,891	50,438,130	1942
1943	13,278,341	12,309,595	14,096,356	1,046,144	40,730,436	6,281,348	6,487,010	138,765	12,907,123	53,637,559	1943
1944	11,881,680	5,444,672	21,853,111	879,511	40,058,974	8,458,974	4,823,502	59,211	13,340,173	53,399,147	1944
1945	12,651,000	4,571,000	21,049,000	1,093,000	39,364,000	11,606,000	3,503,000	192,000	15,301,000	54,665,000	1945
1946	13,932,000	4,384,000	22,502,000	928,000	41,740,000	15,117,000	2,919,000	473,000	18,509,000	60,249,000	1946
1947	5,816,000	2,585,000	22,422,000	841,000	31,664,000	17,868,000	6,117,000	270,000	24,255,000	55,919,000	1947
1948	9,941,000	2,479,000	23,790,000	621,000	36,831,000	13,665,000	4,813,000	179,000	18,657,000	55,488,000	1948
1949	10,017,000	4,205,000	21,473,000	625,000	36,320,000	13,745,000	4,318,000	683,000	18,746,000	55,066,000	1949
1950	8,663,000	3,683,000	25,265,000	788,000	38,399,000	15,237,000	3,577,000	70,000	18,884,000	57,283,000	1950
1951	11,100,000	4,389,000	19,034,000	535,000	35,058,000	15,717,000	4,742,000	561,000	21,020,000	56,078,000	1951
1952	13,152,000	3,037,000	20,862,000	563,000	37,614,000	19,275,000	4,315,000	1,129,000	24,719,000	62,333,000	1952
1953	14,598,000	2,020,000	17,033,000	476,000	34,127,000	18,351,000	6,296,000	1,019,000	25,738,000	59,865,000	1953
1954	17,626,000	4,224,000	20,769,000	1,061,000	43,680,000	15,324,000	9,916,000	2,286,000	27,526,000	71,206,000	1954
1955	16,269,000	2,751,000	17,205,000	737,000	36,962,000	12.393.000	7,458,000	2,297,000	22,148,000	59,110,000	1955
1956	16,148,000	3,001,000	21,988,000	772,000	41,909,000	13,465,000	9,452,000	2,679,000	25,596,000	67,505,000	1956
1957	15,538,000	1,869,000	18,661,000	573,000	36,641,000	14,758,000	7,545,000	2,411,000	24,714,000	61,355,000	1957
1958	15,923,000	579,000	19,337,000	456,000	36,295,000	15,738,000	8,055,000	5,125,000	28,918,000	65,213,000	1958
1959	17,947,000	318,000	22,218,000	338,000	40,821,000	15,587,000	8,232,000	7,075,000	30,894,000	71,715,000	1959
1960	16,381,000	1,064,000	20,287,000	372,000	38,104,000	15,680,000	11,313,000	6,707,000	33,700,000	71,804,000	1960

NOTE: 1960 figures of the International Pacific Halibut Commission are preliminary and subject to further correction.

*Includes the very small amount of fish landed at Neah Bay, Everett and elsewhere on Puget Sound.

**Includes the fish occasionally landed by American vessels at other Canadian ports.

***Landings in Oregon and California not segregated prior to 1925.

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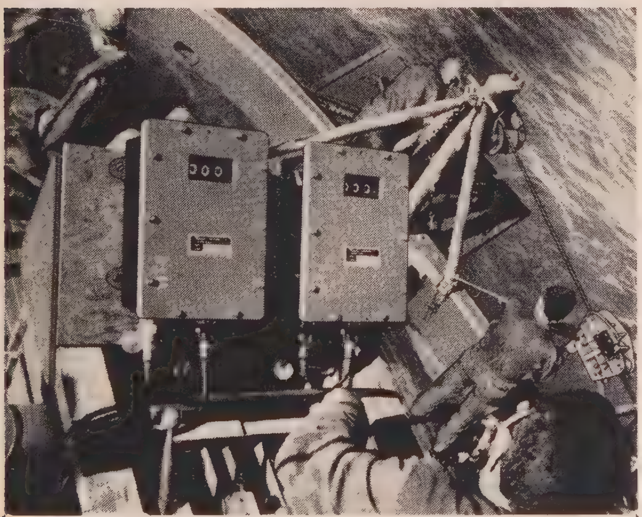

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North Pacific Halibut Seasons

YEAR	AREA 2			AREA 3			YEAR
	Opened	Closed	Fishing Days	Opened	Closed	Fishing Days	
1933	Feb. 1	Aug. 25	206	Feb. 1	Oct. 26	268	1933
1934	Mar. 1	Aug. 19	172	Mar. 1	Oct. 27	241	1934
1935*	Mar. 1	Sept. 6	159*	Mar. 1	Dec. 26	270*	1935
1936	Mar. 16	Aug. 10	148	Mar. 16	Nov. 3	233	1936
1937	Mar. 16	July 28	135	Mar. 16	Oct. 19	218	1937
1938	Apr. 1	July 29	120	Apr. 1	Oct. 29	212	1938
1939	Apr. 1	July 29	120	Apr. 1	Oct. 28	211	1939
1940	Apr. 1	July 13	104	Apr. 1	Sept. 26	179	1940
1941	Apr. 1	June 30	91	Apr. 1	Sept. 14	167	1941
1942	Apr. 16	June 29	75	Apr. 16	Sept. 25	163	1942
1943	Apr. 16	June 20	66	Apr. 16	Sept. 8	146	1943
1944**	Apr. 16	July 9	51**	Apr. 16	Nov. 30	194**	1944
1945	May 1	June 15	46	May 1	Sept. 24	147	1945
1946	May 1	June 11	42	May 1	Aug. 19	111	1946
1947	May 1	June 8	39***	May 1	Aug. 17	109***	1947
1948	May 1	June 1	32	May 1	July 11	72	1948
1949	May 1	June 3	34	May 1	July 12	73	1949
1950	May 1	June 1	32	May 1	July 5	66	1950
1951	May 1	May 28	28§	May 1	June 25	56	1951
1952	May 14	June 8	26§	May 14	July 12	58	1952
1953	May 17	June 9	24§	May 17	July 7	52	1953

NOTE:- All dates given are for the season. Fishing times given are actual periods of fishing, with allowance made in certain years for delays in fishing due to strikes and disputes. Closure generally at midnight of dates given.

§ Does not include special post-season open fishing periods in sub-areas.
* Fleet tied-up voluntarily until April 1.
** Fleet tied-up until May 20 in protest against OPA ceiling prices.
*** Seattle fleet largely tied-up until July 1, due to crew share dispute.

North Pacific Halibut Fishing in "Split-Season" Period

YEAR	AREA 2			AREA 3A			AREA 3B			YEAR
	Opened	Closed	Days	Opened	Closed	Days	Opened	Closed	Days	
1954	5/16	6/5	21	5/16	7/12	58	5/16	7/12	58	1954
	8/1	8/8	8	8/1	8/10	10	8/1	8/10	10	
	..	..	..	..	..	..	8/15	9/9	26	
1955	5/12	6/5	24	5/12	8/4	84	5/12	8/4	84	1955
	8/14	8/21	7	8/14	8/23	9	8/14	8/23	9	
	..	..	..	..	..	..	8/29	9/21	23	
1956	5/20	6/27	46	5/20	2/23	97	5/12	8/24	104	1956
	9/9	9/16	7	9/9	9/18	9	9/9	9/18	9	
	..	..	..	..	..	..	9/30	10/23	23	
1957	5/1	6/17	47	5/1	9/22	144	5/1	10/16	168	1957
	7/29	8/5	7	..	..	..	..	..	..	
1958	5/4	7/2	59	5/4	8/31	119	4/1	10/16	198	1958
	8/31	9/7	7	..	..	..	..	..	..	
1959	5/1	7/8	68	5/1	8/1	92	4/1	10/16	198	1959
	8/22	8/29	7	..	..	..	..	..	..	
1960	5/1	7/31	91	5/1	7/25	85	4/1	10/16	198	1960
	9/11	9/18	7	..	..	..	..	..	..	

PERCENTAGE DIVISIONS OF CATCH BETWEEN FLEETS

YEAR	CANADIAN			AMERICAN			YEAR
	Area 2	Area 3	All Areas	Area 2	Area 3	All Areas	
1960	47.6	46.8	46.9	52.4	53.2	53.1	1960
1959	46.7	41.2	43.5	53.3	58.8	56.5	1959
1958	49.6	40.6	44.8	50.4	59.4	55.2	1958
1957	46.3	34.7	40.3	53.7	65.3	59.7	1957
1956	42.6	33.5	38.1	57.4	66.5	61.9	1956
1955	45.5	30.8	37.6	54.5	69.2	62.4	1955
1954	47.6	29.9	38.9	52.4	70.1	61.1	1954
1953	55.8	28.0	42.9	44.2	72.0	57.1	1953
1952	56.1	24.2	39.6	43.9	75.8	60.4	1952
1951	53.9	19.6	38.0	46.1	80.4	62.0	1951
1950	52.7	15.6	32.8	47.3	84.4	67.2	1950
1949	51.4	17.9	33.7	48.6	82.1	66.3	1949
1948	51.7	18.0	33.6	48.3	82.0	66.4	1948
1947	62.3	25.3	43.7	37.7	74.6	56.3	1947
1946	50.7	13.0	30.7	49.3	87.0	69.3	1946
1945	47.0	12.2	28.0	53.0	87.8	72.0	1945
1944	42.7	8.2	25.0	57.3	91.8	75.0	1944
1943	44.5	5.8	24.1	55.5	94.2	75.9	1943
1942	39.0	7.7	22.2	61.0	92.3	77.8	1942
1941	44.2	8.4	24.7	55.8	91.6	75.3	1941
1940	43.5	5.9	23.8	56.5	94.1	76.2	1940
1939	44.8	10.0	26.5	55.2	90.0	73.5	1939
1938	41.3	10.4	24.7	58.7	89.6	75.3	1938
1937	42.6	7.5	23.8	57.4	92.5	76.2	1937
1936	38.8	7.0	21.7	61.2	93.0	78.3	1936
1935	40.8	5.3	21.3	59.2	94.7	78.7	1935
1934	40.2	3.0	20.5	59.8	97.0	79.5	1934
1933	33.9	2.7	17.7	66.1	97.3	82.3	1933
1932	27.1	2.0	14.4	72.9	98.0	85.6	1932

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PELICAN

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PELICAN, ALASKA

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"KWI-64 Pelican"
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Phil Carmichael, Manager
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FROZEN FISH

- Pacific fish freezing was full of vagaries in 1960.

Salmon was short to the point of utter scarcity, particularly in those species to which the freezer inclines: King, Silver and Chum.

Halibut was abundant, and again available over an extra-long season, so that the frozen pack was limited by the amount consumed fresh.

King crab rose to heights hitherto undreamed, in canned as well as frozen, due to increased abundance, fishing effort, marketing effort, and consumer acceptance.

There was a drift away from the consumer packaged trade, and a strong trend toward the institutional and portionized packs.

Pacific fish freezers faced reality in 1960 and to a significant degree

1960 - Pacific Frozen Food Fish

COMPANY	LOCATION	(Pounds)					
		Halibut	Salmon	Sablefish	Fillets	Misc.	Total
ALASKA							
Booth Fisheries Corporation	Alaska Points	1,329,386	225,606	26,223	---	---	1,581,215
Halibut Producers Cooperative	Alaska Points	845,164	1,870,000	29,247	---	---	2,744,411
Kayler-Dahl Fish Co., Inc.	Petersburg	1,399,102	255,523	249,583	---	4,517	1,908,725
McCallum-Legaz Fish Co., Inc.	Sitka	100,000	30,000	---	---	---	130,000
New England Fish Company	Alaska Points	4,322,000	163,000	8,000	---	---	4,493,000
Phillips, E.C. & Son, Inc.	Ketchikan	1,500,000	550,000	117,000	---	---	2,167,000
San Juan Fishing & Packing Co.	Alaska Points	1,639,274	86,623	---	41,039	---	1,766,936
Washington Fish & Oyster Co.	Port Williams	2,800,000	---	---	---	---	2,800,000
	Cordova	---	100,000	---	---	---	100,000
Miscellaneous Alaska		2,932,074	2,772,248	1,153,947	1,522,961	2,483	8,383,713
TOTAL ALASKA		16,867,000	6,053,000	1,584,000	1,564,000	7,000	26,075,000
BRITISH COLUMBIA							
British Columbia Packers Ltd.	All Points	4,081,458	4,751,778	217,291	3,147,606*	519,224	12,717,357
Booth Fisheries Corporation	Prince Rupert	472,375	189,876	---	50,841	---	713,092
Canadian Fishing Company, Ltd.	Prince Rupert, Vancouver, Butedale	4,935,593	3,396,800	160,134	779,940*	84,194	9,356,661
Fishermen's Cooperative Fed.	All Points	5,676,948	2,327,130	260,903	438,229	100,679	8,803,889
San Juan Fishing & Packing Co.	All Points	604,115	382,507	4,000	748,308	---	1,738,930
TOTAL BRITISH COLUMBIA		15,770,489	11,048,091	642,328	5,164,924	704,097	33,329,929
WASHINGTON							
Booth Fisheries Corporation	Seattle	2,419,613	392,927	576,551	263,823	---	3,652,914
Everett Fish Company	Everett	111,000	92,000	420,000	59,000	26,000	708,000
Main Fish Company	Seattle	---	---	70,000	150,000	200,000	420,000
New England Fish Company	Seattle	743,000	82,000	12,000	---	---	837,000
San Juan Fishing & Packing Co.	Seattle	2,376,995	335,100	645,395	247,886	50,000	3,655,376
Seaport Fish Company	Seattle	405,050	413,872	306,895	130,953	74,294	1,331,064
Seattle Sea Foods, Inc.	Seattle	1,650,000	150,000	---	---	---	1,800,000
Washington Fish & Oyster Co.	Puget Sound	1,009,000	517,000	699,000	---	---	2,225,000
Whiz-Eardley Fisheries Co.	Seattle	650,000#	30,000	100,000	731,000	---	1,511,000
Miscellaneous Washington		3,740,342	1,182,101	542,159	247,338	457,706	6,169,646
TOTAL WASHINGTON		13,105,000	3,195,000	3,372,000	1,830,000	808,000	22,310,000
OREGON							
Columbia River Packers Assn.	Astoria	115,365	82,551	---	---	320,938	518,854
New England Fish Company	Astoria	10,000	62,000	---	---	---	72,000
Portland Fish Company	Portland	10,000	132,000	4,000	22,000	---	168,000
San Juan Fishing & Packing Co.	Warrenton	---	393,000	26,500	1,551,000	49,200	2,019,700
Union Fishermen's Co-op Pkg. Co.	Astoria	---	17,000	53,000	193,000	---	263,000
TOTAL OREGON		135,365	686,551	83,500	1,766,000	370,138	3,041,554
CALIFORNIA							
Lazio, Tom, Fish Company	Eureka	---	600,000	250,000	1,500,000	---	2,350,000
California Miscellaneous		---	---	---	---	421,446	421,446
TOTAL CALIFORNIA		---	600,000	250,000	1,500,000	421,446	2,771,446
TOTAL PACIFIC COAST		45,877,854	21,582,642	5,931,828	11,824,924	2,310,681	87,527,929

*Includes blocks and slabs. #Includes fletches, etc.

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Alaska Custom Cold Storage Freezings - 1960

COMPANY	LOCATION	(Pounds) Halibut	Salmon	Sablefish	Fillet	Misc.	GRAND TOTAL
Alaska Fish & Farm Products	Anchorage	35,610	18,990	---	---	---	54,600
Aleutian Cold Storage Company	Sand Point	3,497,431	---	---	---	---	3,497,431
Juneau Cold Storage Company	Juneau	2,037,487	1,316,953	390,098	---	322,766	4,067,304
Ketchikan Cold Storage Company	Ketchikan	2,418,000	757,000	507,000	---	---	3,682,000
Pelican Cold Storage Company	Pelican	1,967,689	1,847,552	156,833	---	---	3,972,074
Petersburg Cold Storage Company	Petersburg	2,205,000	485,000	428,000	193,000	14,000	3,325,000
Sitka Cold Storage Company	Sitka	1,203,171	340,607	279,644	1,315	---	1,824,737
TOTAL		13,364,388	4,766,102	1,761,575	194,315	336,766	20,423,146

accepted the role of primary producers located thousands of miles from the great consuming markets, whose control over the time and treatment to which consumer packages were subjected was attenuated by that distance. In short, they moved further in the direction of the institutional package, the portion-pack; and in the case of halibut particularly toward the fletch, which the buyer can use as may be desired for cuts to suit his trade and its taste, and that without waste of fish, storage space or freight cost.

- This should not be taken to imply a trend wholly away from the consumer package on the Pacific, for 1960 produced some notable developments in that line as well, and particularly where plastic films and their laminates were employed, usually with vacuum.

A noteworthy extension of a development in the field of portionizing lies in the freezing of *individual* fillets of sole on plates, sorting them as to weight, and then heavily glazing the fillets before packaging them for the restaurant trade. The result is a fancy fillet of known weight and cost.

- Export trade in frozen salmon and halibut showed substantial recovery in 1960 for producers on the Pacific Coast of both Canada and the United States. Shipments of frozen halibut to the United Kingdom alone are believed to have reached 1,000,000 lbs. during the year; and an excellent demand for frozen salmon in Britain was one of the reasons for the scramble for Silvers and Silver Bright Falls during the autumn months of 1960.

(For more detailed discussion of the recovery of the British demand for Pacific frozen salmon and halibut in 1960, reference is made to the article by Harold Sidwell, beginning on Page 109 of this *International Yearbook Number.*)

- Frozen crab—and particularly King crab—continued its steady growth in 1960.

Especially interesting in this connection was the degree to which crab was frozen in the shell, the pack in this form apparently being more than

Washington Eulachon Smelt Catches

YEAR	(Pounds) Cowlitz River	Grays River	Lewis River	Columbia River	TOTAL
1939	1,012,730	30,300	1,342,675	184,348	2,570,053
1940	730,170	60,450	1,341,250	384,650	2,516,520
1941	1,794,233	......	376,975	42,919	2,214,127
1942	1,570,915	51,750	....	54,325	1,676,990
1943	2,973,340	3,675	270,375	124,500	3,371,790
1944	1,125,674	10,900	504,000	249,522	**1,942,771
1945	2,048,438	42,753	1,552,770	215,040	*3,891,463
1946	2,674,040	300	....	51,099	2,725,439
1947	1,192,663	......	....	128,280	1,320,943
1948	2,197,810	......	547,590	296,240	3,041,640
1949	750	250	1,940,850	387,701	2,329,551
1950	31,320	11,600	557,157	379,730	***980,832
1951	......	......	1,050	649,838	651,268'
1952	377,754	......	....	400,747	796,309'
1953	799,788	15,555	....	206,909	1,025,052'
1954	792,902	......	360,871	308,742	1,478,680'
1955	1,344,674	......	....	408,833	1,753,507
1956	575,055	......	....	397,265	1,004,870
1957	987,804	2,165	....	209,924	1,199,893
1958	2,243,148	......	....	109,837	§2,387,372
1959	62,275	......	889,685	297,160	1,293,226
1960	985,114	700	....	56,257	#1,042,206

*Includes 32,462 lbs. caught in Kalama River. **Includes 44,300 lbs. from Kalama River, 7,675 lbs. from Naselle River, and 700 lbs. from Nemah River. ***Includes 1,025 lbs. taken in Kalama River. 'Total includes minor catches from the Kalama River; 16,165 lbs. in 1954; 32,550 lbs. in 1956; 44,106 lbs. in 1959. §Total includes 35,651 lbs. from the Quinault River and 736 lbs. from the Queets River in 1958. #Total includes 135 lbs. from the Quinault River in 1960.

SALMON FREEZING IN CANADA BY MONTHS

Year	Jan.	Feb.	March	April	May	(Pounds) June	July	Aug.	Sept.	Oct.	Nov.	Dec.	TOTAL
1943	42,410	76,821	1,722	1,410	46,691	579,333	1,289,797	1,842,880	3,306,198	4,693,989	2,738,670	194,089	14,814,010
1944	190,468	366,346	199,226	34,334	35,166	799,534	1,736,542	2,902,804	3,602,202	3,489,092	490,764	216,862	14,063,340
1945	419,230	95,244	360,661	19,945	158,305	822,475	822,475	3,789,008	4,264,479	4,264,479	1,313,675	401,122	16,731,098
1946	18,904	520,509	902,832	43,216	114,952	1,213,867	2,131,929	3,098,060	3,709,790	6,134,139	3,262,982	421,969	21,573,149
1947	271,572	221,343	270,066	41,620	342,709	921,265	2,328,428	2,659,952	2,628,493	6,477,323	1,873,407	48,000	18,084,178
1948	443,000	147,000	7,000	15,000	243,000	1,498,000	2,237,000	2,626,000	2,771,000	10,387,000	2,009,000	291,000	22,674,000
1949	157,000	22,000	33,000	107,000	242,000	1,935,000	2,961,000	4,565,000	3,917,000	7,362,000	1,463,000	24,000	22,788,000
1950	4,000	22,000	22,000	5,000	227,000	1,224,000	2,462,000	5,246,000	8,678,000	7,149,000	702,000	8,000	25,749,000
1951	25,000	72,000	2,000	11,000	229,000	1,114,000	2,677,000	4,329,000	4,690,000	6,989,000	1,311,000	16,000	21,465,000
1952	10,000	29,000	100,000	80,000	395,000	1,804,000	3,227,000	5,244,000	3,034,000	2,151,000	1,508,000	18,000	17,600,000
1953	28,000	72,000	30,000	86,000	349,000	1,512,000	2,934,000	4,749,000	5,149,000	6,872,000	665,000	38,000	17,149,000
1954	15,000	70,000	353,000	29,000	204,000	709,000	3,138,000	2,932,000	4,333,000	5,051,000	512,000	28,000	17,374,000
1955	53,000	32,000	47,000	41,000	107,000	914,000	3,579,000	4,165,000	2,850,000	1,218,000	148,000	30,000	13,184,000
1956	33,000	23,000	4,000	16,000	321,000	1,370,000	3,598,000	4,907,000	2,706,000	2,366,000	148,000	33,000	15,525,000
1957	50,000	18,000	30,000	60,000	221,000	1,159,000	3,152,000	3,156,000	1,458,000	627,000	148,000	26,000	10,105,000
1958	30,000	31,000	27,000	19,000	251,000	1,006,000	3,483,000	5,497,000	2,818,000	2,043,000	*	*	15,205,000
1959	28,000	22,000	29,000	108,000	351,000	1,508,000	2,518,000	1,588,000	1,310,000	1,352,000	592,000	37,000	9,444,000
1960	62,000	76,000	22,000	49,000	258,000	1,185,000	3,385,000	3,949,000	3,563,000	1,644,000	512,000	*	14,705,000

NOTE: All figures in accordance with latest reports. *Data not available. Source: Dominion Bureau of Statistics, Dept. of Trade & Commerce.

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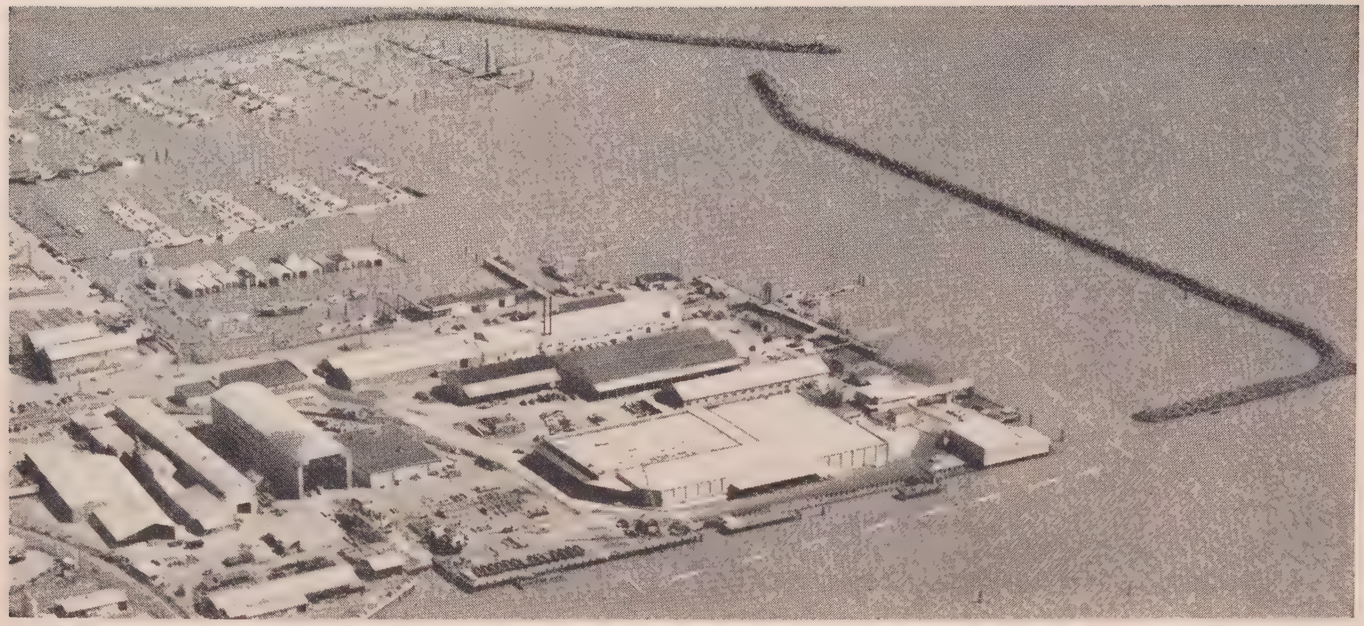
PACIFIC FROZEN FISH

DISTRICT & YEAR	Halibut Pounds	Salmon Pounds	Fillets Pounds	Sablefish Pounds	Miscellaneous Pounds	TOTAL	DISTRICT & YEAR
1950							1950
Alaska	25,625,940	8,467,426	5,113	566,965	98,409	34,763,853	Alaska
British Columbia	15,081,000	23,425,000	701,789	271,848	5,393,954	44,873,591	British Columbia
Puget Sound & Wash. Coast	6,270,705	4,706,925	1,166,019	1,547,807	5,226,430	18,917,886	Puget Sound & Wash. Coast
Columbia Riv. & Ore. Coast	417,651	483,068	3,383,682	63,081	333,117	4,679,599	Columbia Riv. & Ore. Coast
California	60,000	147,753	1,897,253	57,125	2,646,797	4,754,928	California
TOTAL, 1950	47,401,296	37,230,172	7,152,856	2,506,826	13,698,707	107,989,857	TOTAL, 1950
1951							1951
Alaska	19,577,948	8,780,110	6,888	3,241,556	820,473	32,427,075	Alaska
British Columbia	13,358,332	16,000,909	2,292,931	1,050,718	7,492,483	40,195,373	British Columbia
Puget Sound & Wash. Coast	7,789,536	4,314,516	2,119,910	1,791,000	2,275,577	18,290,539	Puget Sound & Wash. Coast
Columbia River & Ore. Coast	291,936	735,305	3,199,153	189,694	124,761	4,540,849	Columbia Riv. & Ore. Coast
California	14,690	172,706	253,169	8,445	2,503,039	2,952,049	California
TOTAL, 1951	41,032,442	30,003,546	7,872,151	6,281,413	13,216,333	98,405,885	TOTAL, 1951
1952							1952
Alaska	17,341,747	5,327,279	8,977	988,520	205,955	23,872,478	Alaska
British Columbia	12,992,587	17,351,803	7,418,334	883,769	3,720,635	42,367,128	British Columbia
Puget Sound & Wash. Coast	8,345,650	5,532,676	3,004,786	1,661,919	751,310	19,296,341	Puget Sound & Wash. Coast
Columbia Riv. & Ore. Coast	219,223	1,157,484	3,827,761	166,072	136,084	5,506,624	Columbia Riv. & Ore. Coast
California	8,676	448,647	1,907,142	72,671	4,134,131	6,571,267	California
TOTAL, 1952	38,907,883	29,817,889	16,167,000	3,772,951	8,948,115	97,613,838	TOTAL, 1952
1953							1953
Alaska	19,727,501	6,399,247	46,675	2,599,418	730,465	29,503,306,	Alaska
British Columbia	18,214,460	14,032,572	5,462,997	1,078,236	534,395	39,312,660	British Columbia
Puget Sound & Wash. Coast	9,473,444	6,380,891	1,654,189	1,651,734	462,602	19,622,950	Puget Sound & Wash. Coast
Columbia Riv. & Ore. Coast	389,483	630,630	2,382,420	204,842	676,081	4,283,456	Columbia Riv. & Ore. Coast
California	90,657	702,556	2,037,765	172,359	2,623,447	5,626,784	California
TOTAL, 1953	47,895,545	28,145,986	11,584,046	5,706,589	5,016,990	98,349,156	TOTAL, 1953
1954							1954
Alaska	20,987,363	9,341,468	57,468	3,072,158	203,706	33,662,163	Alaska
British Columbia	16,268,341	12,354,783	4,687,477	838,571	749,663	34,898,841	British Columbia
Puget Sound & Wash. Coast	12,201,900	4,740,637	2,651,084	1,498,376	460,545	21,552,542	Puget Sound & Wash. Coast
Columbia Riv. & Ore. Coast	864,352	788,963	1,672,109	154,456	210,124	3,690,004	Columbia Riv. & Ore. Coast
California	118,292	709,173	2,192,234	234,319	3,926,655	7,180,673	California
TOTAL, 1954	50,440,248	27,935,024	11,260,372	5,797,886	5,550,693	100,984,223	TOTAL, 1954
1955							1955
Alaska	16,597,154	4,459,926	328,613	2,389,290	102,615	23,877,598	Alaska
British Columbia	15,311,383	10,095,148	1,052,911	936,661	1,163,657	28,559,760	British Columbia
Puget Sound & Wash.Coast	11,058,245	4,034,495	2,913,312	1,638,426	714,435	20,358,913	Puget Sound & Wash. Coast
Columbia Riv. & Ore. Coast	276,224	554,345	1,121,886	118,000	123,275	2,193,730	Columbia Riv. & Ore. Coast
California	63,000	966,000	1,590,713	227,599	1,987,065	4,834,377	California
TOTAL, 1955	43,306,006	20,109,914	7,007,435	5,309,976	4,091,047	79,824,378	TOTAL, 1955
1956							1956
Alaska	21,718,748	8,603,212	3,818	1,919,865	77,455	32,323,098	Alaska
British Columbia	20,074,256	15,891,317	5,532,963	430,934	959,490	42,888,960	British Columbia
Puget Sound & Wash. Coast	11,058,245	6,746,753	3,235,661	2,002,242	1,256,057	24,465,292	Puget Sound & Wash. Coast
Columbia Riv. & Ore. Coast	450,762	1,790,544	1,290,170	230,583	288,374	4,023,433	Columbia Riv. & Ore. Coast
California	109,000	1,263,000	1,060,000	165,106	2,765,894	5,363,000	California
TOTAL, 1956	53,577,345	34,294,836	11,122,612	4,721,730	5,347,270	109,063,783	TOTAL, 1956
1957							1957
Alaska	13,710,555	6,890,597	266,483	2,803,496	19,744	23,690,875	Alaska
British Columbia	13,461,740	8,357,870	6,137,929	943,047	583,237	29,483,823	British Columbia
Puget Sound & Wash. Coast	10,372,000	3,713,634	2,736,000	1,979,000	1,085,000	19,885,634	Puget Sound & Wash. Coast
Columbia Riv. & Ore. Coast	871,000	793,000	2,023,000	302,180	313,000	4,302,180	Columbia Riv. & Ore. Coast
California	55,000	270,000	1,018,000	325,000	2,475,000	4,143,000	California
TOTAL, 1957	38,470,295	20,025,101	12,181,412	6,352,723	4,475,981	81,505,512	TOTAL, 1957
1958							1958
Alaska	18,259,707	5,879,030	3,600	1,341,179	150,000	25,633,516	Alaska
British Columbia	15,707,209	15,598,186	4,932,102	213,598	1,442,444	37,893,539	British Columbia
Puget Sound & Wash. Coast	12,990,000	4,830,086	2,342,597	1,137,445	1,036,496	22,345,624	Puget Sound & Wash. Coast
Columbia Riv. & Ore. Coast	527,000	558,115	2,432,000	70,000	725,985	4,313,100	Columbia Riv. & Ore. Coast
California	238,000	201,382	994,767	148,367	4,070,000	5,652,516	California
TOTAL, 1958	47,730,916	27,066,799	10,705,066	2,910,589	7,424,925	95,838,295	TOTAL, 1958
1959							1959
Alaska	20,010,000	6,298,000	1,219,000	1,291,000	121,000	28,939,000	Alaska
British Columbia	16,198,756	9,314,469	4,795,238	181,058	511,772	31,001,293	British Columbia
Puget Sound & Wash. Coast	12,452,275	3,431,266	5,735,643	2,042,604	690,995	24,352,783	Puget Sound & Wash. Coast
Columbia Riv. & Ore. Coast	140,000	59,000	400,000	1,000	795,000	1,395,000	Columbia Riv. & Ore. Coast
California	190,000	182,000	1,342,000	104,000	3,812,000	5,630,000	California
TOTAL, 1959	48,991,031	19,284,735	13,491,881	3,619,662	5,930,767	91,318,076	TOTAL, 1959
1960							1960
Alaska	16,867,000	6,053,000	1,564,000	1,584,000	7,000	26,075,000	Alaska
British Columbia	15,770,489	11,048,091	5,164,924	642,328	704,097	33,329,929	British Columbia
Puget Sound & Wash. Coast	13,105,000	3,195,000	1,830,000	3,372,000	808,000	22,310,000	Puget Sound & Wash. Coast
Columbia Riv. & Ore. Coast	135,365	686,551	1,766,000	83,500	370,138	3,041,554	Columbia Riv. & Ore. Coast
California	---	600,000	1,500,000	250,000	421,446	2,771,446	California
TOTAL, 1960	45,877,854	21,582,642	11,824,924	5,931,828	2,310,681	87,527,929	TOTAL, 1960

NOTE: Since 1942 Steelheads have been combined with salmon. Figures given in this column cover the quantities of frozen fillets of all varieties of fish reported. British Columbia figures include only amounts directly reported by owners of the fish and do not include unreported quantities in custom freezers. Data cover food fish only and do not include fish frozen for bait or animal food, nor for subsequent canning. Halibut flitches are reported under fillets.



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1960 Pacific Frozen Shellfish

COMPANY	LOCATION	Dungeness Crabmeat lbs.	King Crabmeat lbs.	Crab in Shell lbs.	Shrimp Meat lbs.	Clams Shucked lbs.	Oysters Shucked lbs.	TOTAL lbs.
Alaska King Crab, Inc.	Kodiak, Alaska	---	144,639	76,741	---	---	---	221,380
Alaskan Seafood	Homer, Alaska	---	17,744	3,034	70	---	---	20,848
Aleutian Cold Storage Company	Sand Point, Alaska	487,599	---	1,078,797	---	---	---	1,566,396
Booth Fisheries Corporation	Seattle	---	---	---	---	---	130,261	130,261
British Columbia Packers Ltd.	All Stations	---	---	---	---	8,160	---	8,160
Canadian Fishing Company Ltd.	Prince Rupert, Butedale, Vancouver	990	---	1,070	23,912	---	5,796	31,768
Coast Oyster Company	South Bend, Washington	---	---	---	---	---	1,431,176	1,431,176
Coastal Glacial Sea Foods, Inc.	Hoonah, Alaska	82,404	---	13,854	---	---	---	96,258
Columbia River Packers Assn.	Newport, Oregon	63,863	---	---	---	---	---	63,863
Everett Fish Company	Everett, Washington	1,600	---	---	---	---	---	1,600
Halibut Producers Co-op.	Alaska	496,321	---	227,392	---	---	---	723,713
Harbor Seafoods Company	Bay Center, Washington	25,000	---	10,000	---	---	---	35,000
Kayler-Dahl Fish Company	Petersburg, Alaska	---	---	---	103,000	---	---	103,000
King Crab, Inc.	Kodiak, Alaska	---	154,275	436,993	---	---	---	591,268
Lazio Fish Company	Eureka, California	400,000	---	300,000	100,000	---	---	800,000
New England Fish Company	Oregon	13,000	---	32,000	---	---	---	45,000
Point Chehalis Packers, Inc.	Cordova, Alaska	63,078	---	96,068	---	---	---	159,146
San Juan Fishing & Packing Co.	Warrenton, Oregon	87,000	---	344,900	---	20,600	---	452,500
Seaport Fish Company	Seattle	9,814	---	17,751	---	105	---	27,670
Seaside Clam Company	Oregon	10,641	---	21,121	10,204	---	---	41,966
Seattle Seafoods, Inc.	Seattle	30,000	---	---	---	---	---	30,000
Wakefield Deep Sea Trawlers, Inc.	Alaska	---	1,000,000	1,000,000	---	---	---	2,000,000
Washington Fish & Oyster Co.	Cordova	---	200,000	---	---	---	---	200,000
Whiz Fish Products Company, Inc.	Seattle	10,460	---	32,175	---	---	---	42,635
TOTAL SHELLFISH		1,781,770	1,516,658	3,691,896	237,186	28,865	1,567,233	8,823,608

double that of the preceding year. All of this was not King crab of course.

Freezing of King crab increased in 1960, but not to as great an extent as did canning. Several new freezing facilities for shellfish were activated during the year, notably the floater *Mercator*, which the Pan-Alaska Fisheries sent to the Kodiak Island area in the late summer.

- Changes in North Pacific fish freezing over the next few years were glimpsed in 1960, and can be expected to be revealed more plainly in 1961.

They will be associated particularly with far western sub-Arctic waters.

Early in 1961 Wakefield Fisheries dispatched its freezership *Reefer King* to Adak, where it was engaged in freezing King crabs delivered to it by a quartet of capable trawlers.

This is further west than an American fishing operation has ever been conducted—if we except the codfish salting schooners which a couple of generations ago actually sailed from San Francisco to the Asian coast.

Thus this year Americans are fishing and freezing King crab at Adak, virtually within the shadow of the International Date Line. Moreover, Japan in 1960 added a King crab freezing expedition to the Bering Sea crab canning factoryship which has operated there for years.

Large quantities of fish were frozen by the Japanese in the eastern Bering Sea; and the amount taken and frozen by the Soviet Union's operations in that area certainly was very great.

- This year—1961—Japan at least will have two factoryships working south of the Alaska Peninsula; and it would be too much to expect the Soviets not to join them there.

These operations, judging from the location of the prospecting which preceded them in the fall of 1960, will be along the Continental Shelf in the general sector of the Sanak Bank, between the Sanak and Shumagin Islands; and perhaps westerly of Sanak on Davidson Bank.

These are grounds where Americans catch King crab and, along with the Canadians, halibut. That crab and halibut would not be taken by such operations is too much to expect.

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OREGON OTTER TRAWL LANDINGS

YEAR	SOLE				Flounders	"Turbot"	"Cod" Miscel.	Lingcod	Rockfish	Ocean Perch	Total
	Petrale	English	Dover	Other							
1942	3,745,236	227,783	2,308,308	1,671,162	443,840	71,137	47,255	989,142	1,728,299	1,086,242	12,318,404
1943	3,805,094	898,639	6,431,666	2,239,125	858,051	2,831,013	32,731	934,878	6,762,494	1,601,368	26,395,059
1944	2,019,148	1,057,701	1,593,469	254,400	877,048	700,147	594,810	1,208,051	11,266,874	398,836	19,970,484
1945	1,574,143	1,096,601	2,704,216	238,507	1,024,288	168,811	412,731	1,015,215	17,365,866	40,554	25,640,932
1946	2,984,092	3,950,609	3,197,988	132,136	1,279,839	297,708	260,574	1,150,803	10,671,012	31,310	23,956,071
1947	1,443,936	1,883,438	2,031,905	139,791	667,347	723,497	30,194	569,226	4,637,594	92,344	11,688,763
1948	2,605,460	3,266,422	2,802,181	272,878	1,428,660	1,219,208	29,083	798,952	3,890,003	338,739	16,651,586
1949	1,514,762	1,092,493	3,003,574	299,785	272,042	1,723,963	4,821	728,464	3,307,595	591.842	12,539,341
1950	3,151,833	2,399,103	6,306,144	392,775	355,125	..	349,660	649,719	4,018,991	Dogfish	17,623,350
1951	2,052,366	2,420,333	8,227,444	859,820	351,001	...	672,656	887,187	1,659,212	3,524,208	20,654,227
1952	1,545,540	1,949,294	7,289,059	1,308,778	242,535	...	388,111	511,269	3,722,048	4,431,991	21,388,625
1953	1,028,578	1,784,309	3,146,709	1,989,828	317,293	844,921	419,852	315,347	3,012,714	3,281,196	16,140,747
1954	959,674	1,417,588	2,580,257	2,096,807	561,723	1,112,708	1,190,474	276,952	2,608,517	2,882,847	15,687,547
1955	1,584,946	1,392,162	3,549,087	2,946,087	827,285	1,822,344	2,603,029	419,611	3,183,917	2,847,851	21,176,319
1956	1,204,203	884,026	2,557,140	2,254,749	261,566	609,842	10,013,316	251,033	2,456,212	3,199,251	23,691,338
1957	2,173,978	1,692,966	3,691,189	595,117	460,453	...	11,866,762	595,796	3,566,518	3,324,465	27,967,244
1958	910,938	1,728,943	3,358,904	656,563	546,832	...	13,224,398	318,215	3,449,837	2,472,821	26,667,451
1959	1,285,790	1,536,142	4,567,929	896,264	370,145	...	8,122,506	405,916	3,612,532	1,890,480	22,687,704
1960	5,891,106	1,765,101	4,744,056	1,307,302	319,884	32,096	3,441,124	637,722	5,370,747	2,604,622	26,113,760

U.S. Production of Fish Sticks

(Thousands of Pounds)

Month	1960			1959	1958	1957	1956	1955	1954	1953
	Cooked	Uncooked	Total							
January	5,184	312	5,496	6,265	5,471	4,261	4,862	5,345	2,771	115
February	6,168	360	6,528	6,340	5,925	5,246	5,323	5,794	3,180	133
March	7,245	585	7,830	5,594	5,526	5,147	6,082	7,205	4,003	148
April	4,474	373	4,847	4,708	4,855	4,492	3,771	5,953	3,841	35
May	3,366	278	3,644	4,398	4,229	3,380	3,873	4,879	3,941	22
June	3,988	278	4,266	4,575	4,702	3,522	3,580	5,392	4,381	31
July	3,454	317	3,771	3,783	4,574	3,821	3,153	4,340	3,810	417
August	4,553	393	4,946	3,872	4,358	4,643	4,166	4,520	4,364	454
September	4,733	479	5,212	5,343	5,328	4,861	4,085	4,535	4,272	809
October	*	*	*	5,831	5,485	5,162	5,063	5,261	5,637	1,435
November	*	*	*	4,822	5,091	4,579	4,585	4,946	4,803	1,902
December	*	*	*	4,734	5,467	4,014	4,019	4,876	4,959	2,001
TOTALS	43,165	3,375	46,540	60,265	61,011	53,128	52,562	63,046	49,962	7,502

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HALIBUT FREEZING IN CANADA BY MONTHS

(Pounds)

Year	Jan.	Feb.	March	April	May	June	July	August	September	October	November	December	TOTAL
1943	282,093	296,651	379,829	573,065	2,311,086	2,630,088	654,403	683,421	1,149,085	175,542	100,641	86,663	9,322,567
1944	282,698	273,600	348,847	86,289	314,432	5,465,098	3,232,596	802,380	499,926	436,090	171,886	195,405	12,109,247
1945	394,811	222,238	240,413	220,018	3,489,342	3,408,682	3,408,682	645,187	924,675	924,671	623,475	362,478	14,864,672
1946	183,346	344,076	571,122	10,869	4,558,350	3,798,912	849,659	1,403,497	335,440	174,361	304,517	166,185	12,700,334
1947	332,759	217,645	358,022	167,994	6,059,714	4,782,689	2,186,016	2,575,403	287,595	206,741	52,711	18,000	17,245,289
1948	132,000	68,000	186,000	21,000	7,623,000	4,530,000	1,541,000	210,000	276,000	56,000	182,000	*	14,825,000
1949	30,000	7,000	21,000	49,000	7,821,000	4,990,000	1,878,000	402,000	85,000	340,000	43,000	9,000	15,675,000
1950	10,000	41,000	41,000	260,000	8,953,000	4,991,000	2,039;000	392,000	90,000	321,000	237,000	**	17,375,000
1951	16,000	42,000	32,000	87,000	11,499,000	3,071,000	560,000	1,109,000	164,000	44,000	7,000	21,000	16,652,000
1953	79,000	136,000	119,000	165,000	5,662,000	9,498,000	2,487,000	2,175,000	222,000	77,000	15,000	3,000	20,638,000
1954	49,000	112,000	181,000	110,000	6,367,000	9,266,000	2,696,000	2,951,000	262,000	130,000	91,000	16,000	22,231,000
1955	102,000	128,000	186,000	42,000	5,077,000	4,621,000	7,641,000	2,312,000	1,747,000	121,000	68,000	72,000	22,117,000
1956	132,000	203,000	107,000	141,000	2,209,000	5,456,000	2,661,000	2,341,000	2,298,000	206,000	28,000	29,000	15,811,000
1957	69,000	110,000	106,000	272,000	5,965,000	5,091,000	2,299,000	2,488,000	1,043,000	502,000	85,000	50,000	18,080,000
1958	92,000	60,000	88,000	80,000	4,832,000	6,510,000	2,638,000	2,613,000	1,097,000	170,000	*	*	18,180,000
1959	72,000	32,000	71,000	457,000	5,555,000	7,551,000	3,734,000	793,000	582,000	406,000	251,000	157,000	19,589,000
1960	75,000	149,000	69,000	1,076,000	5,565,000	5,403,000	3,387,000	958,000	1,459,000	396,000	215,000	*	18,677,000

NOTE: 1952 data not available.
All figures in accordance with latest reports.

*Data not available.

**Less than three firms reported, therefore the data may not be shown.
Source: Dumminion Bureau of Statistics - Ottawa, Canada.

- There will be changes in fish and shellfish freezing to Westward; and some of them will come this year.

- Possibility of extending the full quality freshness of fish through ionizing radiation is being investigated this year under a new research program entered into by the U. S. Bureau of Commercial Fisheries and the U. S. Atomic Energy Commission.

The research enters an area of enormous possibilities for the fishing industry, whose markets may eventually be broadly extended through application of radiation to the protection of fresh quality. Extension of the shelf life of seafoods, particularly those not amenable to freezing, would open new and diversified markets for the sale of fresh fish.

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U.S. Production of Fish Sticks, by Areas

Area	October-December				January-March				April-June				July-September				12 Months Total *lbs.	
	1959		1958		1960		1959		1960		1959		1960		1959			
	Firms	*lbs.	Firms	*lbs.	Firms	*lbs.	Firms	*lbs.	Firms	*lbs.	Firms	*lbs.	Firms	*lbs.	Firms	*lbs.	1960	1959
Atlantic Coast States	25	12,769	21	13,633	23	16,388	24	15,070	22	10,288	22	11,797	22	11,447	24	10,812	50,892	51,312
Interior & Gulf States	6	1,493	4	1,614	5	1,532	5	1,712	4	1,350	5	994	4	1,277	6	1,213	5,652	5,533
Pacific Coast States	10	1,125	11	1,192	7	1,934	10	1,417	7	1,119	9	890	8	1,205	10	973	5,383	4,472
TOTAL	41	15,387	36	16,439	35	19,854	39	18,199	33	12,757	36	13,681	34	13,929	40	12,998	61,927	61,317

*Thousand.

WASHINGTON TRAWL LANDINGS

Year	Sole and Flounders	"Cod"	Lingcod	Sablefish	Rockfish	Miscellaneous	TOTAL	Year
1930	339,932	26,318	---	---	24	32,419	398,693	1930
1931	323,064	30,269	---	---	----	3,674	357,007	1931
1932	281,302	46,512	---	---	1,000	1,374	330,188	1932
1933	296,517	59,965	---	---	----	5,200	361,682	1933
1934	247,684	25,405	13,454	---	8,313	6,116	300,972	1934
1935	2,575,998	185,786	285,759	---	63,284	23,743	3,134,570	1935
1936	4,791,994	406,361	237,229	---	81,301	22,650	5,539,535	1936
1937	4,265,491	441,130	235,431	---	72,640	14,919	5,029,611	1937
1938	5,036,852	456,814	286,439	---	107,163	21,952	5,909,220	1938
1939	4,659,122	354,805	197,982	---	112,395	231,614	5,555,918	1939
1940	5,917,096	518,705	247,007	---	248,711	946,788	7,878,307	1940
1941	7,977,576	457,253	199,128	---	93,286	582,295	9,309,538	1941
1942	9,575,018	1,172,811	3,845,055	118,406	1,034,417	717,279	16,462,986	1942
1943	13,350,936	996,963	4,859,693	778,451	4,464,702	1,015,394	25,366,139	1943
1944	7,806,664	623,151	4,254,298	1,429,682	5,132,233	270,898	19,516,926	1944
1945	9,185,003	2,417,053	4,177,839	529,507	16,093,712	211,068	32,614,182	1945
1946	9,709,656	3,701,647	3,193,436	628,756	10,094,207	93,705	27,421,407	1946
1947	9,294,256	2,442,583	2,481,497	155,981	6,024,582	99,887	20,498,786	1947
1948	13,744,310	5,371,084	4,649,453	314,229	10,262,442	162,166	34,503,684	1948
1949	10,368,493	5,465,538	3,063,672	586,368	12,610,526	588,282	32,682,879	1949
1950	10,379,364	6,330,873	2,365,948	497,822	12,210,430	414,731	32,199,168	1950
1951	11,016,660	8,395,728	1,844,559	1,277,731	9,939,526	2,057,590	34,531,794	1951
1952	12,865,755	9,976,893	1,510,339	643,485	11,288,025*	3,375,374	39,659,871	1952
1953	7,890,623	8,183,080	949,757	225,228	6,979,133*	4,468,543	28,696,364	1953
1954	12,314,392	15,392,911	1,517,995	335,995	12,857,626*	1,593,525	44,011,733	1954
1955	13,890,754	12,608,123	3,428,200	316,950	9,082,237*	3,512,835	42,839,099	1955
1956	14,186,788	9,560,914	2,845,989	3,268,911	10,689,677*	1,756,587	42,308,866	1956
1957	13,459,636	11,280,451	2,566,023	563,968	8,787,706*	5,482,072	42,139,856	1957
1958	10,684,243	12,243,074	2,876,935	370,321	8,134,745*	8,516,854	42,826,172	1958
1959	12,521,754	12,973,903	4,502,215	939,921	12,050,303	7,659,973	50,648,069	1959
1960	13,091,035	5,129,139	4,750,582	958,062	11,211,965	5,135,071	40,275,854	1960

*Includes Pacific Ocean Perch: 1952 - 1,694,355; 1953 - 3,101,562; 1954 - 6,250,000; 1955 - 3,498,758; 1956 - 4,994,875; 1957 - 4,515,704; 1958 - 2,736,207; 1959 - 5,839,951; 1960 - 6,018,186.

NOTE: 1960 figures include estimates through the balance of the year made by the Washington Department of Fisheries.

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YEAR	Alaska		California		Washington and Oregon		Pacific Totals	
	Cases	Value	Cases	Value	Cases	Value	Cases	Value
1949	75	$450	896,489	$4,222,300	*	*	896,564	$4,222,750
1950	--	---	1,388,110	7,471,751	*	*	1,388,110	7,471,751
1951	35	263	1,192,428	6,340,527	**	**	1,192,463	6,340,790
1952	80	600	1,328,513	6,753,039	**	**	1,328,593	6,753,639
1953	50	375	1,091,815	5,778,955	34,400	$133,300	1,126,265	5,912,630
1954	--	---	976,477	5,098,992	49,148	188,736	1,025,625	5,287,728
1955	--	---	1,949,375	10,062,298	61,846	242,628	2,011,221	10,304,926
1956	--	---	2,548,328	12,084,221	78,398	316,127	2,626,726	12,400,348
1957	--	---	2,632,149	11,778,910	88,409	389,792	2,720,558	12,168,702
1958	--	---	2,327,734***	15,143,559	98,920	539,107	2,426,654	15,682,666
1959	--	---	2,869,604	14,468,684#	130,376	757,484	2,999,980	15,226,168

*Not Available. **Combined with California. ***Contains small amount packed in American Samoa.
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MILD CURE

- With less than 5,000 tierces of King salmon mild cured on the Pacific Coast in 1960, this commodity touched a new low in the whole history of this business from its bare beginning at the first of the century.

The trouble basically was one of fish supply—an unprecedented shortage of King salmon suitable for curing, augmented by scarcity of Silvers which prevented effective substitution of this species.

True, there has been a tendency in recent years for more and more fresh and frozen salmon to be used for smoking, with some decline in the amount put into tierces—and this continued in 1960—but the short pack was due to short supply, no doubt about that .

Best figures for Pacific mild cure production in 1960 are: 4,715 tierces of Kings; 595 tierces of Silvers; 120 tierces of Falls.

Inclusion of the Falls in the mild cure figures departs somewhat from the common practice of the trade but is followed this year because it is apparent that the 120 tierces of this species recorded were packed for a different purpose than has been common in the past.

While there have been a few tierces of Falls cured almost every year, these generally have been packed for subsequent hard-smoking for the specialty trade, rather than for use in the normal outlets for mild cure. In 1960, however, it appears that the Falls cured were put up in a frantic effort to provide salmon which could be substituted for the better known varieties in some markets.

Even the run of Falls was scant, else splitting and curing of these fish might have been greater.

- Acute scarcity of troll salmon, both Kings and Silvers, produced not only the smallest pack on record — but also the highest prices ever paid for salmon.

The situation was unhealthy all around from the producers' point of view. No matter what they got for their catches, even above $1 per pound, the fishermen were hard up against it.

The resource was sick and the packers in trouble with their trade.

What caused the crisis?

Will it become chronic?

These are questions which were being asked among fishermen, buyers, splitters, distributors, smokers, consumers—scientists, even.

To give clear-cut specific response is not possible, but examination of the evidence, as interpreted by the best-informed biologists and fishermen, produces these answers as expressive of objective opinion:

1. Marine conditions, not specifically understood or identified, probably impaired the sea survival of salmon along much of the coast from Southeast Alaska to California. Just what did the damage, and when it occurred, is not clear. Pinks, Silvers and Chinooks at least appear to have been affected more than Sockeye, except in northern British Columbia. Chums probably suffered also.

2. The adverse marine conditions usually do not long persist and can be expected to be reversed, with

1960-MILD CURED SALMON

COMPANY	Tierces, 825 lbs. net	
	King	Silver
ALASKA:		
Alaska Coast Fisheries	20	..
Booth Fisheries Corporation	14	..
Bunzen & Davis	4	..
Halibut Producers Cooperative	534	..
McCallum-Legaz Fish Company	87	..
New England Fish Company	107	57
Northern Products Corporation	252	45
Pick-Shapiro Fisheries	10	..
Seaboard Fishing Company	65	5
Sitka Cold Storage	47	..
Vita Food Products	351	129
Yukon River	232	..
TOTAL ALASKA	1,792	236
BRITISH COLUMBIA	337	33

COMPANY	Tierces, 825 lbs. net.		
	King	Silver	Fall
PUGET SOUND:			
Booth Fisheries Corporation	77	24	..
Everett Fish Company	8	..	6
McCallum-Legaz Fish Company	161	61	10
New England Fish Company	56	4	..
San Juan Fishing & Packing Company	129	63	..
Seaport Fish Company	507	60	43
Sebastian-Stuart Fish Company	20	..	..
Washington Fish & Oyster Company	198	37	61
Whiz-Eardley Fisheries	230	77	..
TOTAL PUGET SOUND	1,386	326	120
OREGON: (None reported)	...	...	...
CALIFORNIA: (Estimated)	1,200	...	...
TOTAL PACIFIC COAST	4,715	595	120

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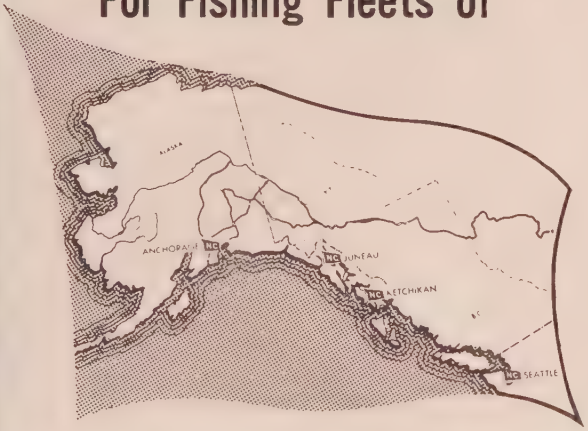

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favorable survival climate probable. However—and this must not be overlooked in a wave of optimism—it must be accepted that the King salmon resource in particular is subject to intensive fishing along the entire coast. Silvers also come under heavy pressure of exploitation. Both species are eagerly sought by sportsmen as well as commerce, and the Kings come in large degree from long, strong streams, productive of power and subject to impairment by hydro-electric dam construction.

Scarcity of Kings and Silvers has occurred in previous years, but generally was regional in scope, with some sections of the coast poor in production while others were good.

In 1960 the adversity was general. It applied as heavily as anywhere else in British Columbia waters, where fishing generally is good and quite consistent.

- Scarcity of salmon suitable for curing produced some novel alternatives as autumn came on and made it apparent that Nature was not going to provide a way out.

Sablefish was one possible substitute where fat fish were favored for smoking—and the price of sable went to record levels, on a parity with halibut.

Fall Chinooks on the Columbia River were diverted from the canneries to the freezers as raw material for the smokers' kilns. It is interesting, and perhaps significant of an accelerating trend, that these fish were frozen rather than split.

MILD CURE

- Although California trolling in 1960 was not as good as in some recent years, it was perhaps in better condition than elsewhere along the coast north through the range of this form of fishing for Kings and Silvers to Prince William Sound.

Kings in California waters appear to be on the way to rehabilitation with rather steady increase, and better things than those of 1960 are expected in future years by the California Department of Fish and Game.

It's experience in 1960 showed relatively better escapement to the state's northerly rivers than the fishermen's catch.

There was a very good run to Nim-

PACIFIC MILD CURED SALMON PACK

(IN TIERCES OF 825 LBS. NET WEIGHT)

YEAR	Alaska	British Columbia	Puget Sound	Columbia River	Oregon Coast	California Coast	Sacramento River	Kamchatka	Recapitulation		ANNUAL TOTALS	YEAR
									Kings	Silvers		
1900	. . .	. . .	. . .	1,275	. . .	. . .	950	. . .		. . .	2,225	1900
1901	67	. . .	600	3,000	. . .	. . .	3,100	. . .		. . .	6,767	1901
1902	67	. . .	425	4,213	188	504	2,325	. . .		. . .	7,722	1902
1903	8	. . .	824	6,725	. . .	354	3,600	. . .		. . .	11,511	1903
1904	34	. . .	1,250	9,088	. . .	448	4,719	. . .		. . .	15,539	1904
1905	189	1,175	3,000	9,805	415	310	2,979	. . .		. . .	17,873	1905
1906	1,126	957	. . .	8,000	740	685	2,177	. . .		. . .	13,685	1906
1907	1,657	1,993	2,060	6,070	860	722	4,102	. . .		. . .	17,464	1907
1908	1,378	1,060	. . .	4,960	. . .	252	3,243	. . .		. . .	10,893	1908
1909	2,292	1,560	2,109	5,540	664	991	5,111	. . .		. . .	18,267	1909
1910	3,357	1,638	2,435	7,922	1,465	75	5,516	. . .		. . .	22,408	1910
1911	3,164	2,006	2,745	8,185	1,377	770	2,011	. . .		. . .	19,758	1911
1912	5,245	1,380	3,013	5,824	3,479	100	3,274	. . .		. . .	22,315	1912
1913	7,440	2,125	3,631	5,746	2,681	550	4,789	. . .		. . .	26,952	1913
1914	3,872	3,182	1,934	5,205	457	1,476	1,829	. . .		. . .	17,955	1914
1915	2,966	1,119	2,235	4,078	333	945	1,630	. . .		. . .	13,306	1915
1916	4,475	767	1,755	4,656	194	1,069	650	. . .		. . .	13,566	1916
1917	2,955	429	1,063	1,886	. . .	300	1,508	. . .		. . .	8,181	1917
1918	4,234	729	1,093	1,804	275	721	1,913	. . .		. . .	9,869	1918
1919	6,803	1,173	2,423	3,328	148	2,381	2,355	. . .		. . .	18,611	1919
1920	2,770	1,116	2,036	2,275	102	1,793	1,345	. . .		. . .	11,437	1920
1921	3,966	1,076	4,517	3,051	160	1,251	812	. . .		. . .	14,833	1921
1922	5,158	2,253	4,727	1,621	162	550	1,195	. . .		. . .	15,666	1922
1923	4,075	1,819	5,799	1,769	176	1,229	606	. . .	15,129	344	15,473	1923
1924	6,069	2,969	6,409	2,320	286	2,624	1,291	. . .	21,476	492	21,968	1924
1925	7,119	3,098	5,600	2,746	547	2,241	1,523	500	22,530	844	23,374	1925
1926	5,781	2,183	4,087	1,055	1,205	929	1,767	650	16,585	1,072	17,657	1926
1927	8,982	2,689	5,160	951	918	927	1,125	854	19,390	2,216	21,606	1927
1928	5,784	2,676	4,304	1,305	2,163	1,686	179	783	14,051	4,046	18,880	1928
1929	5,477	3,016	4,311	1,969	1,787	1,160	155	1,083	15,749	3,209	18,958	1929
1930	5,331	2,630	4,361	1,068	102	1,184	124	2,144	16,049	895	16,944	1930
1931	4,123	1,083	5,700	1,251	372	1,027	164	712	13,862	570	14,432	1931
1932	5,560	1,542	3,650	2,012	1,119	752	294	640	13,443	2,126	15,569	1932
1933	4,852	3,097	3,527	2,431	660	1,392	37	340	15,295	1,041	16,336	1933
1934	4,908	4,657	3,882	1,855	270	1,572	5	776	16,960	965	17,925	1934
1935	5,487	2,665	3,563	1,730	210	2,090	439	670	15,450	1,404	16,854	1935
1936	5,222	1,642	4,897	1,138	68	1,939	366	840	15,611	495	16,106	1936
1937	6,373	4,055	2,775	604	. . .	1,026	49	778	15,552	108	15,660	1937
1938	7,786	3,128	3,657	1,292	387	627	945	787	16,451	2,158	18,609	1938
1939	7,724	2,802	2,937	501	20	417	119	600	14,905	224	15,129	1939
1940	5,210	693	3,531	33	. . .	711	308	11	10,283	714	10,497	1940
1941	8,862	1,474	3,561	229	. . .	360	15	. . .	14,174	302	14,501	1941
1942	6,748	1,055	2,494	20	. . .	. . .	. . .	. . .	10,241	76	10,317	1942
1943	3,869	811	1,022	21	. . .	166	. . .	. .	5,278	611	5,889	1943
1944	3,518	2,019	959	16	. . .	1,259	1,329	. . .	7,969	*1,050	9,100	1944
1945	7,763	1,209	1,790	159	. . .	*1,065	1,570	. . .	10,843	*3,200	13,556	1945
1946	6,824	1,975	2,170	96	. . .	. . .	§2,764	. . .	13,216	613	13,829	1946
1947	5,919	1,675	2,129	99	. . .	§	919	. . .	10,631	110	10,741	1947
1948	5,076	1,025	2,282	77	. . .	. . .	. .	. . .	8,490	36	8,456	1948
1949	4,449	1,177	2,049	86	. . .	891	. . .	. . .	8,625	27	8,652	1949
1950	4,809	889	3,264	90	. . .	1,214	. . .	. . .	10,109	157	10,266	1950
1951	4,671	897	2,436	20	. . .	1,200	. . .	. . .	9,150	74	9,224	1951
1952	3,489	752	2,318	4	. . .	493	. . .	. . .	7,052	. . .	7,052	1952
1953	4,484	742	2,688	30	. . .	1,033	. . .	. . .	9,209	75	8,977	1953
1954	4,003	645	2,155	. . .	. . .	1,010	. . .	. . .	7,500	313	7,813	1954
1955	3,375	678	2,796	189	. . .	4,200	. . .	. . .	11,238	**	11,238	1955
1956	2,002	688	2,267	131	. . .	2,075	. . .	. . .	7,416	***	7,163	1956
1957	2,385	533	2,374	97	. . .	456	. . .	Falls	5,845	***	5,845	1957
1958	3,749	760	3,240	209	. . .	845	. . .	169	6,866	1,768	8,803	1958
1959	3,658	608	1,517	. . .	. . .	2,547	. . .	. . .	8,245	85	8,330	1959
1960	2,028	370	1,712	. . .	. . .	1,200	. . .	. . .	4,715	595	5,310	1960

NOTE: Mild cured Falls not included in table, but 1960 pack of 120 tierces of this salmon was among the largest on record. *Estimated segregation. In 1945 the Silver category includes 200 tierces of Sockeyes. **Species segregation not available. ***Approximately 100 tierces of Silvers included with Kings. §Segregation as to district not available.

OREGON TROLL SALMON LANDINGS

(Pounds)

Year	Columbia River		Coastal Ports		State Total		Oregon Total Both	Year
	Chinook	Silver	Chinook	Silver	Chinook	Silver		
1942	323,769	100,843	320,766	926,936	644,535	1,027,779	1,672,314	1942
1943	157,814	125,618	247,349	534,813	405,163	660,431	1,065,594	1943
1944	457,721	286,637	815,254	1,184,605	1,272,975	1,471,242	2,744,217	1944
1945	1,012,524	231,774	979,105	950,614	1,991,629	1,183,388	3,174,017	1945
1946	1,063,943	478,100	1,522,452	935,182	2,586,395	1,413,381	3,999,776	1946
1947	626,276	598,735	1,948,432	1,278,140	2,574,708	1,876,875	4,451,583	1947
1948	532,788	409,015	984,613	932,557	1,517,401	1,341,572	2,858,973	1948
1949	223,938	163,380	1,136,868	1,126,669	1,360,806	1,290,049	2,650,855	1949
1950	291,386	365,540	731,395	883,407	1,022,781	1,248,947	2,271,728	1950
1951	464,973	589,697	2,135,752	1,688,096	2,600,725	2,277,793	4,878,518	1951
1952	821,404	532,224	2,262,898	2,242,232	3,084,300	2,774,456	5,858,758	1952
1953	518,228	368,730	1,404,483	1,937,542	1,922,711	2,306,272	4,228,983	1953
1954	520,396	243,107	3,277,655	999,696	3,798,051	1,242,303	5,040,854	1954
1955	522,821	344,542	3,058,350	1,854,341	3,581,171	2,198,883	5,780,054	1955
1956	476,058	477,069	4,089,685	2,894,208	4,565,743	3,371,277	7,937,020	1956
1957*	178,094	371,307	2,838,350	3,482,115	3,016,444	3,853,422	6,869,866	*1957
1958	92,772	202,964	1,730,940	1,140,884	1,823,712	1,343,848	3,167,560	1958
1959	74,288	230,583	449,626	772,808	523,914	1,003,391	1,527,305	1959
1960	92,885	231,382	1,254,891	557,165	1,347,776	788,547	**2,136,323	1960

*Columbia River also received 21,556 Pink Salmon. **Total for first 9 months only.

bus hatchery near Sacramento, but the fish were predominantly male. Thus the egg take, while good, was not as fine as it could have been had there been proportionately more females.

The best news about salmon was what man has been doing to improve the lot of this popular food and game fish. Among the activities:

1. First runs from experiments designed to learn what happens to salmon from the time they hatch and the time they reach the ocean came in as salmon specially marked two and three years ago began to appear in the commercial and sport catch.

2. Experimental gear designed to catch tiny salmon before they pass through the Golden Gate was tested and found satisfactory. If the Department can catch such fish regularly it may be able to determine where losses occur in their migration to the sea.

3. The Wildlife Conservation Board adopted a 10-year master plant for clearing debris out of salmon spawning streams in the north Coastal areas.

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Value of Principal Canned Fish Products

Year	PACIFIC SALMON			SARDINES		Tuna	Mackerel	Oysters	Shrimp	Clams	Crabs	Miscellaneous Fish Products	GRAND TOTAL
	Pacific Coast States	Alaska	Total	New England States	California								
1921-25*	$11,060,592	$29,457,922	$40,518,514	$5,781,523	$4,428,409	$5,751,385	.....	$2,704,433	$3,928,434	$1,721,051	$71,087	$1,552,481	$66,457,317
1926-30*	12,772,490	38,329,082	51,101,572	6,281,996	9,494,787	8,990,774	$979,927	2,344,887	5,022,925	2,517,544	36,729	2,703,368	89,474,509
1930-35*	7,301,890	28,513,777	35,815,667	2,974,505	4,519,462	8,646,033	2,117,791	1,392,686	3,836,331	2,242,896	109,235	2,649,056	64,303,662
1936	5,309,438	44,751,633	50,061,071	5,740,454*	7,302,273	14,715,391	3,542,895	2,180,869	4,672,198	2,976,297	130,753	3,242,053	94,564,254
1937	8,386,165	44,547,769	52,933,934	4,998,373	8,592,117	18,995,779	2,673,608	2,932,681	7,130,747	3,013,446	269,699	3,634,551	105,174,935
1938	5,728,892	36,636,897	42,365,789	2,367,045	7,102,358	15,183,636	2,896,220	1,886,476	4,872,393	3,189,628	260,134	3,322,210	83,445,889
1939	7,339,727	34,441,122	41,780,849	7,075,096	9,553,663	20,079,567	2,588,695	2,378,945	5,397,662	3,798,319	259,756	3,714,998	96,627,550
1940	6,575,176	31,474,492	38,049,668	3,736,394	8,975,257	23,727,560	4,101,369	2,526,859	4,318,325	3,778,363	308,890	4,659,256	94,181,941
1941	11,199,317	56,217,601	67,416,918	12,590,958	18,091,873	19,397,887	3,503,718	2,997,114	4,882,544	3,711,029	547,617	5,659,466	138,684,157
1942	13,673,968	48,300,209	61,974,177	12,162,451	15,509,964	30,742,493	3,693,082	3,598,703	7,347,330	3,791,058	1,755,065	4,893,094	144,996,947
1943	5,110,847	57,824,267	62,935,114	11,104,570	14,352,359	31,430,189	5,271,203	2,821,556	5,360,647	2,802,420	1,194,483	4,334,350	141,188,792
1944	5,187,136	51,196,140	56,383,276	14,819,803	15,225,919	40,836,117	7,033,997	2,283,429	4,854,799	3,820,612	1,361,458	6,983,036	152,914,237
1945	7,942,102	44,644,303	52,586,405	12,077,201	15,346,472	47,407,451	4,046,691	2,029,953	1,918,633	7,391,098	883,767	9,669,714	152,800,571
1946	17,003,459	53,157,194	70,160,653	20,275,590	19,895,649	59,135,823	7,575,291	5,249,272	8,428,735	11,145,047	4,720,119	21,770,334	227,629,455
1947	31,969,134	88,669,542	120,638,676	28,310,674	16,538,375	90,609,175	15,018,633	4,259,485	8,192,004	8,642,235	2,705,391	16,398,742	310,678,920
1948	24,008,466	96,528,730	120,537,196	29,359,114	21,892,893	112,612,296	9,850,834	4,777,531	7,791,313	8,329,639	4,846,494	18,621,357	336,181,479
1949	22,167,812	81,263,168	103,430,980	21,051,675	21,334,825	97,710,325	6,848,930	6,525,207	11,203,325	8,779,018	3,490,885	15,128,735	295,503,905
1950	27,187,060	82,354,118	109,541,178	21,209,033	26,345,609	112,630,094	7,491,816	7,096,235	12,773,346	10,839,889	3,121,269	20,086,878	331,335,347
1951	29,388,514	79,237,355	108,625,869	14,635,352	19,851,806	99,046,206	6,259,222	5,931,276	12,187,049	11,773,909	3,536,558	19,313,048	301,210,295
1952	21,906,773	76,357,016	98,263,789	21,502,970	5,655,463	113,034,510	11,362,697	7,047,441	12,998,814	12,209,558	2,087,019	21,666,937	305,829,198
1953	24,067,839	58,172,629	82,240,468	16,954,119	8,314,304	126,257,608	5,038,512	6,559,309	18,946,622	12,629,803	2,898,016	27,034,913	306,873,674
1954	28,915,972	63,339,170	92,255,142	18,152,815	12,590,594	142,148,816	2,508,715	5,829,378	13,691,253	12,301,033	3,699,293	27,840,827	331,017,866
1955	24,507,762	56,848,555	81,356,317	9,333,350	12,444,322	125,259,064	3,333,979	7,003,967	13,562,310	12,057,326	2,190,664	37,022,692	303,563,991
1956	16,523,868	76,948,880	93,472,748	16,749,794	9,095,082	140,338,342	6,434,860	6,222,329	15,800,229	13,619,064	2,738,587	43,095,428	347,566,463
1957	23,245,194	62,564,386	85,809,580	14,715,243	7,064,975	135,906,903	7,403,682	7,008,471	13,005,132	13,316,654	3,104,606	47,430,826	334,766,072
1958	26,712,763	65,531,283	92,244,046	15,873,963	16,806,005	161,793,000	2,657,012	5,341,609	20,790,602	12,523,194	3,070,355	56,766,254	387,866,040
1959	22,358,370	49,493,910	71,852,280	14,902,142	5,428,672	159,142,613	4,234,735	5,720,918	16,948,470	13,290,828	3,548,677	53,206,705	348,276,040

*Average. Note - California sardine figures for recent years include anchovies.

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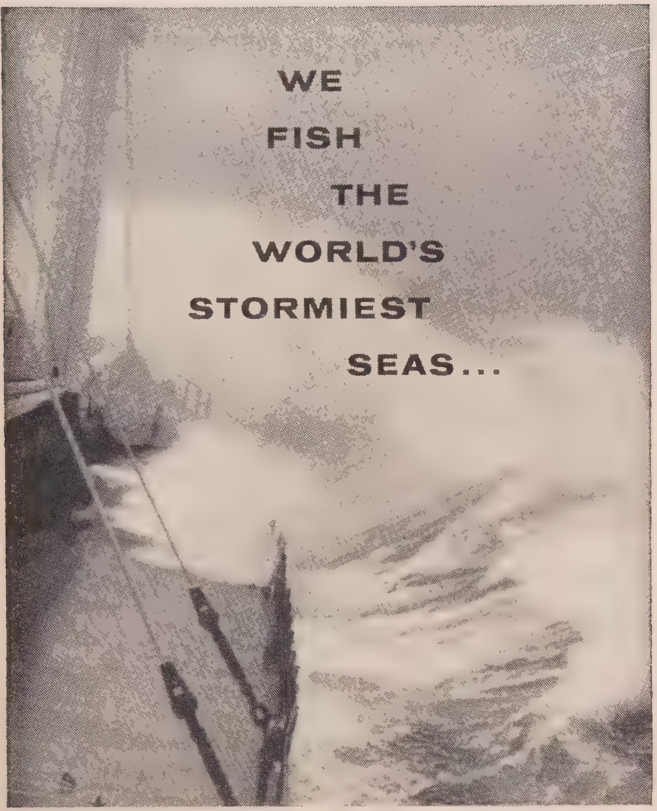

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CRAB

- Crab canning on the Pacific was beset in 1960 by high costs, of raw material and labor, complicated by a ceiling which seemed to be set by the persistent pressures of competing foods.

Fresh and frozen picked crabmeat proved more attractive to the packers of the Pacific Northwest states than did the canned product, and as result canning was on a relatively limited scale.

On the other hand, the picked crabmeat, whether fresh or frozen, was selling at bargain levels. Operators were inclined to be content with a moderate margin rather than the prospects of much larger investment for a much longer period in the hope of a somewhat longer profit, if lucky.

- With the opening of the late 1960-61 crab season the Oregon fleet went fishing actively at 14c per lb., while the Washington cooperative headquartered on Grays Harbor adopted a price of 16c for its members' crabs.

Shortly before Christmas the buyers, and particularly the canners, generally had declared their inability to pay 16c when their competitors in Oregon were paying 2c less and quoting fresh picked crabmeat, delivered Seattle, at $1.03.

There was good reason to believe that part of the reluctance of the Washington dealers to offer a compromise price was due to the light weight of the crabs composing the December deliveries. Recovery was said to be exceptionally poor for December crabs.

- While Dungeness crabmeat, fresh or frozen, at $1.03 per lb., Seattle, was considered a bargain, distributors of canned crab declared that product was pinched against a competitive ceiling that could not be penetrated without sacrifice of business.

Quotations at the time on canned Dungeness crab, cases of 24s, 6½-oz., fancy, $13; cases of 24s, 3½-oz., fancy, $8.25.

Alaska King crab, American pack, at the same time was priced at $15 per case of 24s, 6½-oz., and $1 more for the 7½-oz. tin in 24s, with 4-doz. cases of 7½-oz. bringing $32.

- Late in 1960 the Pacific Marine Fisheries Commission, with Oregon dissenting, declared for establishment of a uniform crab fishing season in Pacific Northwest and Northern California waters.

This could be significant in future years, although observers felt it unlikely that the uniform opening could be expected soon, as the PMFC resolution called for the date to be selected by "agreement between scientists and the fishermen," something which did not realistically seem possible.

- King crab ruled Pacific crab canning in 1960, the Alaska King crab canning industry raising its production to 91,818 cases, an increase of 36,500 cases from the previous record of 55,316 cases, set the year before.

Alaska's canning of King crab is conducted altogether in the coastal segment from Cook Inlet west to the

1960 - Pacific Canned Crab

COMPANY	Cannery Location	Cases, basis 48 1/2-lb. Cans
ALASKA		
KING CRAB:		
Alaska King Crab, Inc.	Kodiak	17,664 (a)
King Crab, Inc.	Kodiak	17,115 (b)
Pacific American Fisheries, Inc.	Alitak	21,942
	King Cove	17,778
	Squaw Harbor	4,530
Pan-Alaska Fisheries	Ouzinkie, etc.	12,789 (c)
	Total KING CRAB	91,818
DUNGENESS CRAB:		
Big Point Sea Food Co.	Big Point	75
Coastal Glacier Sea Foods, Inc.	Hoonah	746
Nelson Crab & Oyster Co.	Cordova	2,100 (d)
Thompson Company, N.E.	Kake	1,500
Totem Sea Foods Co.	Tenakee Springs	1,236
	Total DUNGENESS CRAB	5,657

COMPANY	Cannery Location	Cases, basis 48 1/2-lb. Cans
WASHINGTON and OREGON		
DUNGENESS CRAB:		
Chinook Packing Co.	Chinook, Washington	108
Crown Packers	Hoquiam, Washington	1,312
Harbor Seafoods, Inc.	Bay Center, Washington	553
Nelson Crab & Oyster Co.	Tokeland, Washington	12,000 (d)
Pacific Pearl Frozen Foods, Inc.	Aberdeen, Washington	4,157 (e)
Point Adams Packing Co.	Hammond, Oregon	5,242
Other Oregon	Various	900
	Total WASHINGTON and OREGON	24,272
	Total DUNGENESS CRAB	29,929
	Total KING CRAB	91,818
	GRAND TOTAL	121,747

(a) Includes 5,855 cases of 1-lb. 24s. (b) Includes 3,116 cases of 1-lb. flats, 24s. (c) Includes 5,708 cases of 1-lb. flats, 24s. (d) Partly estimated. (e) Includes 2,496 cases of 48 quarters, counted two for one.

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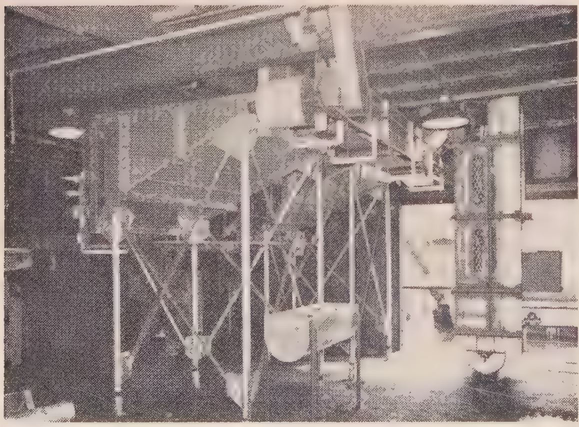

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Shumagin Islands, the Bering Sea fishery being devoted to the production of frozen King crab.

Astonishing rise of King crab canning in Alaska in the past decade is revealed in this data:

ALASKA CANNED KING CRAB

Year	Cases	Value
1951	56	$ 1,344
1952	6,293	264,598
1953	6,479	210,845
1954	35,017	1,014,753
1955	17,986	483,320
1956	37,300	1,002,251
1957	45,196	1,169,483
1958	45,042	1,079,019
1959	55,316	1,437,890
1960	91,818	2,846,358

Note: Above data are given in standard case of 48 halves. Moderate quantities of 1-lb. flats are included, but these have been reduced to the basis of standard cases.

- Various factors are credited with the growth of King crab canning in Alaska: (1) Discovery of new grounds, and exceptionally good fishing on some old ones in the early part of 1960; (2) entry of Pacific American Fisheries, Inc., one of the largest of salmon canners, into the industry, with three crab canneries associated with its salmon installations; (3) growing consumer acceptance of King crab as it has been made available over wider areas of the United States through established canned seafoods distributing organizations.

Greatly increased availability of canned King crab in 1960 appears to have had an adverse effect upon the Dungeness crab canning business, whose output for the year in United States canneries fell to 29,929 cases, the smallest pack in several years.

Dungeness crab canning was beset by several factors: (1) conflict between boat owners and buyers, primarily in the Grays Harbor area; (2) divergence in landed price between the northern California-Oregon Coast sector, with its principal interest in the fresh trade, and the Columbia River north sector, where Washington canning centers; (3) the volatile market resulting in part at least from the increased production of domestic King crab, and the tendency of crab operators in the Pacific States to handle their crabs in the shell or as picked crabmeat, either fresh or vacuum frozen in cans.

Washington Crab Landings

YEAR	Puget Sound Pounds*	Grays Harbor Pounds**	Willapa Harbor Pounds**	Columbia River Pounds**	TOTAL POUNDS
1936	441,892	451,890	865,194	....	1,758,976
1937	500,104	643,234	1,441,352	3,428	2,588,118
1938	521,180	387,728	1,831,716	....	2,740,624
1939	441,122	620,004	2,153,496	....	3,214,622
1940	428,692	1,134,182	3,341,754	....	4,904,628
1941	514,184	1,293,222	3,968,152	206,984	5,982,542
1942	989,186	2,262,696	2,134,818	249,304	5,636,004
1943	1,267,024	2,732,090	1,052,550	56,660	5,108,324
1944	1,790,118	2,622,316	1,529,196	83,326	6,024,956
1945	1,993,398	1,961,978	1,439,204	4,838	5,399,418
1946	2,284,810	3,674,536	2,022,004	121,335	8,102,685
1947	1,512,808	6,599,380	3,822,288	38,184	11,972,660
1948	1,933,426	9,080,584	4,241,256	614,184	15,869,450
1949	1,355,148	7,633,157	3,204,240	950,006	13,142,551
1950	2,373,316	2,171,072	1,427,042	399,440	6,371,166
1951	1,547,502	1,321,400	1,806,096	154,970	4,829,968
1952	915,807	1,373,708	1,892,842	82,580	4,264,937
1953	1,190,186	2,700,206	3,035,435	78,263	7,004,090
1954	1,667,085	3,099,287	3,356,879	191,177	8,314,428
1955	1,212,743	3,269,131	2,457,479	209,871	7,149,224
1956	597,067	3,832,842	4,082,936	329,386	8,842,231
1957	331,061	7,174,757	3,196,881	386,931	11,089,630
1958	466,826	7,473,607	3,300,403	691,725	11,932,561
1959	568,376	4,900,608	2,446,493	341,602	8,257,079
1960	963,940	3,381,724	2,134,772	535,994	7,016,430

*Conversion 22 lbs. per dozen. **Conversion 24 lbs. per dozen.

NOTE: 1960 Puget Sound figures are incomplete but include best available estimates to Dec. 31, 1960.

- Crab handling methods, particularly those associated with fishing and delivery of live crabs, underwent rather notable development in 1960, primarily in the King crab fishery, but with reaction on the Dungeness crab operations as well.

Several fishing vessels designed primarily for Alaska salmon operations in their construction in 1960 were designed with holds which could be used as live holds in fishing and for transport of live crabs.

Again, an improved hydraulic crab winch was offered on the market by Marine Construction & Design Co., Seattle; the first significant improvement in years in the safe and swift handling of crab gear at sea. The large size, weight and ungainly character of the over-sized pots used in King crab fishing called for the improved mechanical handling device.

- As 1961 opened Prince Rupert Fishermen's Cooperative Association was building a crab cannery at Prince Rupert, B. C., where they expected to handle about 1,250,000 lbs. of crabs per season. Crabs this year will be supplied primarily by the association's crab vessels *Misty Morn, Amber III and Tow Hill.*

- American King crab operations were carried into new waters in January, 1961, when Wakefield Fisheries stationed its freezership *Reefer King* at Adak, where she was handling the catch of four large fishing craft.

The venture was admittedly exploratory, and reached out to waters far to the west of any previously fished by American crab vessels.

Tak Miahara and Glen Davenport, biologists respectively from the U. S. Bureau of Commercial Fisheries and the Alaska Department of Fisheries, accompanied the *Reefer King* to Adak as scientific observers.

- Profound effect upon the future of the King crab resources of the North

OREGON CRAB LANDINGS

Year	Dozen												
	Jan.	Feb	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1945	17.006	19,199	17,315	41,706	47,675	43,305	10,820	10,413	4,226	9,135	9,807	12,419	243,026
1946	17.065	21.815	30,732	34,074	80,626	34,414	13,694	5,783	4,568	8,859	12,834	14,814	279,278
1947	22.660	27.457	40,555	46,527	78,649	50,317	20,806	7,188	3,813	3,686	8,621	3,971	314,250
1948	35,592	37.973	63,516	87,353	96,885	34,841	15.171	9,098	4,969	4,205	2,662	9,206	401,471
1949	49,617	22,681	52,571	60,613	73,273	45,310	19,539	11,433	4,828	4,770	8,914	20,312	373,861
1950	22.414	26,186	38,315	35,513	46,910	27,012	6,997	4,145	3,914	3,095	9,730	25,864	250,095
1951	34,161	39,080	41,361	49,042	54,348	11,740	4,764	3,742	2,065	...	...	....	240,303
1952	19.864	23.672	28,024	42,256	45,842	11,150	5,268	3,577	2,233	5,618	15,981	14,780	218,265
1953	15,790	28,080	49,241	58,797	60,383	18,252	6,143	3,822	2,769	4,087	17,105	58,339	322,808
1954	61,369	62,746	86,731	72,434	36,170	7,789	5,054	3,666	1,896	2,849	16,334	30,034	387,072
1955	37,850	44,103	39,902	30,658	25,931	13,498	6,732	3,540	2,434	6,882	21,834	33,863	267,227
1956	31,828	28,271	55,700	70,457	65,922	28,469	7,847	4,369	3,080	3,169	15,672	29,650	344,434
1957	68,638	53,288	59,565	81,651	73,596	39,950	28,434	13,877	3,857	5,494	26,880	25,437	480,667
1958	81,009	52,045	91,881	61,139	39,038	17,026	6,369	4,660	2,934	2,756	25,862	60,537	445,256
1959	47,884	35,950	35,457	33,687	28,962	6,816	2,789	1,893	2,553	1,832	32,399	66,943	297,165
1960	51,395	28,121	43,450*	43,450	42,496	10,880	4,267	3,394	2,029	*	*	*	229,482

*Figures not available.

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Pacific and Bering Seas, and their utilization and the marketing of the product may be expected from developments of 1960.

For a number of years preceding 1960, the King crab resources of the eastern North Pacific and Bering Seas apparently were in stable condition with the Japanese and American exploitation maintained at a constant level. Actually, American operators for the two or three years previous had found it uneconomic to operate in the Bering Sea, partly as result of the presence there of great quantities of Japanese tangle nets, which made ocean trawling for King crabs difficult; partly because of the relatively smaller size of the crabs taken in Bering Sea; and finally because of the cost and difficulty of operating there.

The Japanese on their part, agreeing that the resource could not be sustained under the impact of a largely increased exploitation, had restrained their activities to those of a single vessel with her satelite fishing fleet. This factory ship, the *Tokei Maru*, had fished there effectively for a considerable number of years, during which there was no evident decline in the abundance of the king crab population.

However, at the end of April, 1960, the operations of the USSR in Bering Sea took on new character. Where the Soviets had been trawling in eastern Bering Sea continuously since early 1959, and with incredible intensity, determination and hardihood, at the end of April a new expedition appeared on the king crab grounds about 30 miles offshore due north of Amak Island of the Aleutian chain. This was in direct contradiction of previous declarations by officers of the Russian trawling fleet to the effect that they had no intention of exploiting the King crab resource. It is true, of course, that the operations on the King crab grounds, using both trawls and tangle nets, were pursued by an entirely different fleet and organization than that engaged in trawling further north for bottom fish.

Thus a new, heavy, and aggressive exploitation fell on the Bering Sea King crab resources under the Hammer and Sickle.

● Japan at the same time departed from its previous limitation of fishing authority to the *Tokei Maru* and, apparently in competitive answer to the Soviet move, authorized a second operation to be conducted by the factory ship *Shin-yo Maru, of* 5,651 gross tons.

Five companies had previously sought authority to enter the Bering Sea crab fishery but Hokuyo Suisan K.K., which had pioneered the Bering

Pacific Canned Crab

(Shown in Standard Cases of 48 half-pound Cans)

YEAR	Alaska	Washington	Oregon	California	American Total		British Columbia	North American Total	YEAR
					Cases	Value			
1960	97,475	18,130	6,142	. . .	121,747	$ 3,624,512	N.A.	121,747	1960
1959	70,907	29,149	9,835*	. . .	109,891	2,714,962	14,495	124,386	1959
1958	48,494	52,429	11,653*	. . .	112,576	2,473,526	13,369	125,945	1958
1957	49,361	45,970	10,818	303	106,552	2,360,644	9,954	116,506	1957
1956	41,300	32,512	9,904	660	84,376	1,988,351	11,871	96,247	1956
1955	24,534	9,450	2,959	156	37,099	972,610	7,942	45,041	1955
1954	41,642	36,141	24,717	362	102,862	2,618,464	9,717	112,579	1954
1953	21,026	15,482	7,898	146	44,552	1,303,606	5,037	49,589	1953
1952	22,647	9,076	9,624	237	41,584	1,173,211	5,148	41,584	1952
1951	26,753	19,885	39,878	1,500	88,016	2,332,424	4,159	88,016	1951
1950	25,927	23,270	28,075	1,260	78,532	1,868,680	7,283	85,815	1950
1949	13,198	65,004	36,652	. . .	114,854	2,547,765	4,839	119,693	1949
1948	26,076	104,362	56,982	3,500	187,420	4,264,622	3,500	190,920	1948
1947	10,158	54,756	34,582	6,624	106,120	2,037,904	2,481	108,601	1947
1946	15,792	19,263	29,106	15,194	79,356	2,271,965	1,455	80,811	1946
1945	15,760	9,070	896	. . .	25,726	398,898	. .	25,726	1945
1944	13,376	16,524	10,968	. . .	40,868	653,888	385	41,253	1944
1943	9,386	18,332	20,874	. . .	48,592	782,173	. .	48,592	1943
1942	7,766	26,052	45,338	. . .	79,156	1,266,496	885	80,041	1942
1941	11,126	13,232	13,346	. . .	37,704	311,822	3,386	41,090	1941
1940	12,828	8,634	3,792	. . .	25,254	178,021	3,794	29,048	1940
1939	11,978	2,716	8,406	. . .	23,100	184,254	2,049	25,149	1939
1938	. . .	. . . .	. . .	. . .	27,016	258,375	2,157	29,173	1938
1937	. . .	. . . .	. . .	. . .	27,394	269,699	1,546	28,940	1937
1936	. . .	. . . .	. . .	. . .	14,758	124,925	. . .	14,758	1936
1935	. . .	. . . .	. . .	. . .	13,840	106,832	. . .	13,840	1935
1934	. . .	. . . .	. . .	. . .	22,869	184,052	. . .	22,869	1934
1933	. . .	. . . .	. . .	. . .	17,564	134,330	. . .	17,564	1933
1932	. . .	. . . .	. . .	. . .	9,314	73,112	. . .	9,314	1932
1931		. . . .	. .	. . .	263	2,104	. . .	263	1931

*Includes small amount packed in California.

Sea reduction industry based on bottom fish trawling, received approval of its application.

Permit for the operation of the *Shin-yo Maru* was qualified with the limitation that she should remain clear of the area of operations of the pioneer *Tokei Maru.*

● Another significant development of 1960 with respect to the King crab resource was found in the Alaska fishery regulations for that year, the first to be promulgated by the state in its authority over the fisheries which began with the first of 1960. In these regulations, which were subsequently implemented and extended by legislation, the use of trawls for fishing King crabs in the Kodiak and adjacent waters was prohibited and the use of this gear in Kachemak Bay and Cook Inlet was severely restricted. Furthermore, the use of more than 30 pots by an individual vessel was prohibited.

These two regulations generally were accepted as being designed to encourage Alaska residents to engage in the fishery through making it difficult for larger vessels, which would need more than 30 pots, to fish for King crabs. In addition, the use of trawls was limited to vessels entering the waters of the state from other states for the purpose of king crab fishery.

Effect of the Alaska legislation was evident almost at once in a dissemination of operations and the reduction of the size of many of the vessels engaged. The Alaska legislature further implemented the restrictive measures with the offshore fishing control bill which forbade the landing in Alaska of migratory fish and shellfish taken on the high seas if they were not taken in conformity with Alaska legislations applicable within territorial waters. This would have the effect of prohibiting the landing in Alaska of King crabs taken on the high seas by means of trawls, providing they were landed in the Kodiak or Cook Inlet areas. Use of trawls on the Bering Sea side of the Alaska Peninsula would still be permissible.

In general it may be said that the Alaska regulations and legislation in 1960 acted restrictively upon the activities of American fishermen while the Soviet Union and Japan were greatly increasing the intensity of their exploitation of the King crab populations of the high seas adjacent to the coast of Alaska.

● A fourth notable development of 1960 with respect to King crab operations off the Alaskan coast was the entry into this fishery in the fall of the year of the factory ship *Mercator,* dispatched to the Kodiak area by Pan-Alaska Fisheries, Inc. This vessel, by far the largest American craft engaged in King crab operations, either now or in the past, is fully equipped both for canning and freezing King crabs, as well as for servicing a fleet of perhaps ten fishing vessels. Her facilities permit her to remain at sea for at least a month without contact with the shore and she is expected to introduce into the King crab fishery from the American point of view a new type of operation. While canning has been tried by Americans in the past, and freezing also on the high seas, *Mercator* stands as the first venture in which these two activities have been combined on so large a scale.

Full extent of the Japanese and Russian King crab production in Bering Sea waters in 1960 was not known to the end of that year. Both the Japanese operations appeared to have secured their quotas without difficulty. No data is available as to the extent of the Russian catch, but a large number of capable vessels is known to have been engaged in the fishery for a period of some months.

● Kachemak Bay was a bright spot—one of several—in Alaska's King crab business of 1960, yielding 4,047,958 lbs. of crabs which averaged 9.5 lbs. each.

Earnings of Kachemak fishermen from the sale of King crabs in 1960 was $323,836, the Alaska Department of Fish and Game reports.

Best month was February, when 28 boats landed 984,789 lbs.; followed by May, when there were 24 boats catching 555,283 lbs. of King crab. In June the fleet was down to only nine boats, but they caught 462,513 lbs.

All fishing was by means of pots inside the bay, but about 4% of the total delivery was from trawling in outside waters. Most of the catch was delivered at Seldovia, with Homer and Seward receiving lesser quantities.

In 1959 the Kachemak King crab yield was 2,191,437 lbs.

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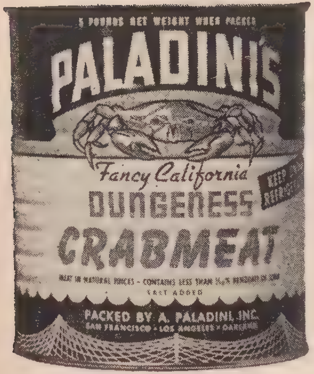

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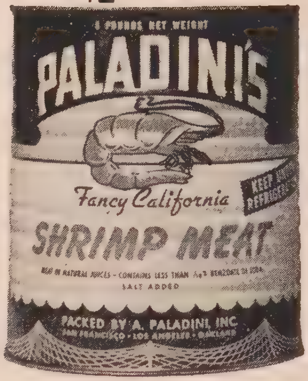

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● American King crab operations moved out strongly in a number of directions in 1960; and that in the face of threatening challenges from two international competitors.

The foreign pressure step-up became evident in the late spring of 1960 when the Japanese government authorized a second King crab operation in Bering Sea, supplementing that of the *Tokei Maru* fleet, which had been active in the area for a number of years.

This action was a reversal of the previous position, which had been to the effect that the King crab population of Bering Sea could not be expected to support an increased fishery. The Japanese explanation for the additional permit was that the Soviet Union was increasing fishing pressure in Bering Sea by entering that King crab area, and that Japanese necessarily would have to increase its fishing in order to protect its competitive position.

Details as to the Soviet King crab catch from Bering Sea are not available, but they have been semi-officially reported as "somewhat less than the catch made by the Japanese."

● American activity in Bering Sea also moved-up in 1960, perhaps in part because of the increased fishing intensity by Japan, and the Soviet entry; but also in part at least because of legislative measures enacted by the State of Alaska.

The new law required that King crab fishing vessels operate not more than 30 pots in most fishing areas of the state's coastline, but exempted Bering Sea, which served to stimulate a movement of the larger vessels into that area as the new act became effective.

Alaska legislation of 1960 had several broad effects on the King crab fishery.

Another was the provision against trawl fishing for King crabs in any degree in most waters. This tended to prevent prospecting for new grounds, as the vessels had been accustomed to set their pots and then to go prospecting with a small trawl in the general area while the pots were fishing.

● Alaska King crab shore operations were also increased notably during 1960.

Pacific American Fisheries, Inc., largest American salmon canning company, which had entered King crab canning with a plant at King Cove on the Alaska Peninsula some years ago. This was followed by a second cannery at Alitak, and in 1960 by a third, at Squaw Harbor in the Shumagin Islands.

With these three plants in operation, the company readily became the largest American King crab canner, a field to which its operations have been restricted.

In the frozen King crab field the largest factor, Wakefield Fisheries, Inc., likewise expanded its activities, acquiring the Whitney & Co. cold storage, crab and shrimp plants at Seldovia, and with them a well-equipped operating position in the Cook Inlet King crab area.

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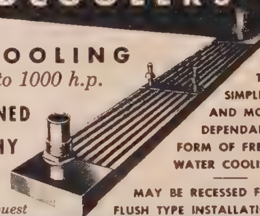

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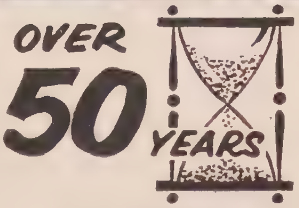
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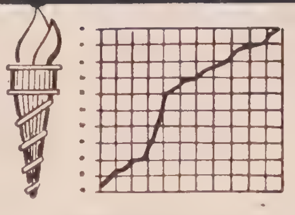
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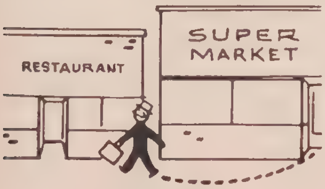

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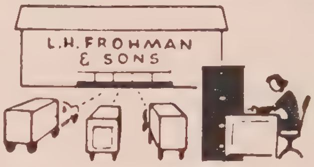

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SHRIMP

- North Pacific shrimp canning, which should be carefully distinguished from Pacific Mexico's excellent production of large frozen shrimp, experienced a serious setback in 1960. Production fell to 69,728 cases, a full 100,000 below the 169,144 cases packed the year previous. Moreover, the scant 1960 pack was less than half that of 1958.

Severe restriction of 1960 North Pacific canned shrimp was blamed by the industry generally upon the cost of machine-peeling the tiny shrimp. It was only the introduction of effective picking machines a few years ago that made the North Pacific Ocean Pink shrimp resource of significant importance, creating the canning industry.

Prior to that time utilization of the little shrimp had been restricted to Southeast Alaska and British Columbia, where comparatively low-cost labor was available for picking on a piecework basis. Moreover, the Indians along the coast, perhaps as result of many years of adaptation, appeared particularly fitted for this work. The shrimp picked by these hand methods was in good but closely limited demand as a fresh and frozen product, esteemed for cocktails and salads by Pacific gourmets, but unknown elsewhere in the United States.

Cost of hand picking precluded the development of a canning industry, or the broadening of the market for the tiny pink shrimp meats outside of the Pacific-bordering states.

- Development of a mechanical shrimp-peeling machine particularly adapted to peeling the extra small shrimp taken at many points on the Pacific Coast from Morro Bay north to Kodiak opened the way to using the resource for canning, and as result in the mid-Fifties there was an astonishing rise in shrimp fishing and canning. Centers of shrimping and canning developed on the Columbia River, Grays and Willapa Harbors, Southeast Alaska, Resurrection Bay, Alaska, and Kodiak Island. Eventual extension of the fishery further west than Kodiak appears certain. While most of the North Pacific shrimp are of the several varieties known by the trade as Pacific Ocean Pinks, in the Central Alaska coastal area the trawl catches contain a substantial percentage of larger shrimp whose flesh is white with red markings.

Rising rapidly in 1959, Pacific shrimp canning yielded 169,000 cases, valued at $2,727,000. The year saw a shift in canning operations north from the Washington coast to Alaska, where the fishing seemed more consistent and the selection of shrimp on the basis of size and character promised better economic return.

However, the 1959 prosperity of the industry was followed by a sharp setback early in 1960 when the costs of the shrimp picking machines to the industry were advanced to the point where several of the operators were forced out of business and all limited their production sharply.

Before the end of the year the shrimp-peeling cost controversy had erupted into a complaint by the Federal Trade Commission, which took the side of the North Pacific operators, and also into a legal action by the shrimp canners, seeking compensatory damages from the machine producers on the basis of virtually the

1960 Pacific Canned Shrimp

COMPANY	Cannery Location	Cases, 48 Halves
E. H. Bendiksen Company	South Bend, Washington	21,000*
Crown Packers, Inc.	Hoquiam, Washington	2,996
Halibut Producers Cooperative	Seward, Alaska	6,080
Harbor Sea Foods, Inc.	Bay Center, Washington	2,606
King Crab, Inc.	Kodiak, Alaska	8,847
Pacific Shrimp, Inc.	Warrenton, Oregon	4,250
Seaside Clam Company	Warrenton, Oregon	5,000*
Seward Seafoods, Inc.	Seward, Alaska	5,949
William Smith Company	Wrangell, Alaska	11,000
Miscellaneous	Washington and Alaska	1,000*
	GRAND TOTAL	69,728
	TOTAL VALUE	$522,920

PACIFIC SHRIMP, Previous Years		Value	Standard Cases
1959 -	Alaska	$ 1,686,295	104,327
	Washington & Oregon	1,041,389	64,817
	TOTALS, 1959	$ 2,727,684	169,144
1958 -	Alaska	$ 545,642	50,613
	Washington & Oregon	1,666,035	94,952
	TOTALS, 1958	$ 2,211,677	145,565
1957 -	Alaska	$ 164,437	16,444
	Washington & Oregon	512,082	32,794
	TOTALS, 1957	$ 676,519	49,238

*Partly estimated.

MEXICAN SHRIMP EXPORTS THROUGH CALIFORNIA AND ARIZONA

1959-60				1958-59			
MONTH	Fresh Pounds	Frozen Pounds	Total Pounds	MONTH	Fresh Pounds	Frozen Pounds	Total Pounds
November 1959	1,327	5,393,229	5,394,556	November 1958	481	5,079,119	5,079,600
December 1959	--	5,581,995	5,581,995	December 1958	--	4,938,151	4,938,151
January 1960	--	3,432,149	3,432,149	January 1959	130	3,505,899	3,506,029
February 1960	--	2,776,422	2,776,422	February 1959	--	2,803,967	2,803,967
March 1960	279	3,319,113	3,319,392	March 1959	391	2,216,910	2,217,301
April 1960	--	3,310,076	3,310,076	April 1959	1,817	3,124,198	3,126,015
May 1960	--	3,343,363	3,343,363	May 1959	1,357	2,914,128	2,915,485
June 1960	2,920	3,957,963	4,021,994*	June 1959	530	2,097,105	2,097,635
July 1960	--	2,396,623	2,396,623	July 1959	30,109	2,361,107	2,391,216
August 1960	--	231,880	231,880	August 1959	17,460	404,954	422,414
September 1960	--	2,764,620	2,764,620	September 1959	955	3,097,054	3,098,009
October 1960	--	7,227,861	7,227,861	October 1959	--	6,439,809	6,439,809
TOTAL	4,526	43,735,294	43,800,931	TOTAL	53,230	38,982,401	39,035,631

*61,111 pounds canned shrimp included in June 1960 exports.

same charges as those made in the F.T.C. complaint.

As 1961 opened the controversy was still far from being adjudicated, and the shrimp industry was still sharply limited in its activities.

- Whether legal action tending to free operations, or forbid them by confirmation of prohibitive costs, can develop in time to decide the fate of North Pacific shrimping in 1961 was still uncertain as this was written. It appeared that the reduced production of 1960 had resulted in virtually complete clean-up of stocks, and that canners and fishermen would be eager to get into operation again if it should be made possible.

- Pacific shrimp canning encountered adverse conditions—basically economic—in 1960; and there were some readjustments on the basis of resource availability.

Principal problem of the year arose from cost of peeling the tiny pink shrimp on which the Pacific canning business is based. Rental charges on peeling machines advanced sharply about the middle of the year.

In anticipation of this increase, packers stepped-up their spring production sharply at the old rates and then suspended earlier than usual during the summer. Resumption of operations thereafter never was fully effective and much of the expansion anticipated in Alaska was foregone pending strongly increased demand, settlement of the legal actions based on peeling costs and practices, or both.

- Despite the cut-back in production as result of mounting costs, prices for the canned product failed to react as might be expected, and at 1960 year-end they were comparatively little changed from the year before.

Thus, quoted on the basis of cases of 24 halves, Pacific Northwest Ocean Pink wet pack shrimp were $7.25; Alaskas: tiny, $7.25; small, $8; medium, $10.

Alaska cold pack shrimp prices at year end were $1.25 per lb. in 5-lb. cans.

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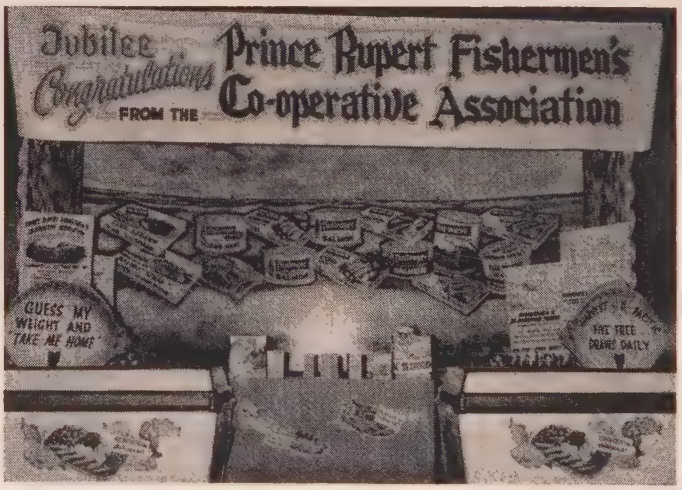
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OYSTERS

● Tendency toward the development of prepared frozen oyster products, both raw and pre-cooked, was manifest in the Pacific Coast oyster business in 1960.

Going along with the remarkable rise of canned Pacific oyster stew beginning a few years ago, the new items in their specialized fields continue to (1) broaden the market for oysters by appealing to consumers to whom whole or natural oysters are not attractive; (2) utilize in some cases oysters whose size, shape or damage in shucking otherwise would reduce their marketability; (3) secure greater economic return from the oysters by addition of value through manufacture.

Notable among the more successful new Pacific oyster products are items generally known under the term of "cutlets." These are usually breaded discs of oyster, formed by slicing a cylinder of oysters pressed firmly together after it has been frozen in a tube and then surface-thawed sufficiently for removal. The cutlets may or may not be precooked and then re-frozen.

● Contraction of oyster canning was evident on the Pacific Coast during the season culminating in the spring of 1960. Whether this was due to a corresponding increase in the volume of oysters marketed fresh is not altogether certain, but industry opinion was inclined to subscribe to this explanation.

The pack of actual canned oysters in the Pacific Northwest — 67,652 standard cases—was barely half that of the previous calendar year. These two figures are not directly comparative, as the 67,652 cases is for the 1959-60 oyster *season*, while the official figures for the *calendar year* 1959 give 125,251 cases of oysters canned.

● Canned oyster stew, with a seasonal total of 197,121 cases, was quite closely comparable with the 216,683 cases credited to the previous season.

There was a substantial reduction in the quantity of imported oyster seed planted in Pacific Coast waters in 1960, with a total of 47,441 cases, against 58,047 cases the year before. This reduction is believed to have resulted from the quantity of domestic seed available.

Looking ahead into 1961, substantial imported seed planting is expected, as 1960 Pacific oyster spawning in Washington waters was a complete failure. Biologists who monitor the setting for the Washington Department of Fisheries reported that they were unable to find a single set on their test cultch.

● Oyster operations in the Pacific area took a new and notable turn in 1960 when the new plant of Nichiro Gyogyo K.K. went into production at Hiroshima, Japan.

Widely heralded as the most modern oyster plant in the world, Nichiro's move into broad diversification is devoted primarily to freezing oysters individually in compartments recessed in polyethylene sheets, but also engages in canning oysters. The individually frozen specialty items are for

Pacific Canned Oysters and Oyster Stew

CANNED OYSTERS (Cases of 48 cans)				SEASON	CANNED OYSTERS STEW (Cases of 48 cans)		
No. 1 E.O.	"Buffet"	Other Sizes	TOTAL Basis Std. Cases		No. 1 E.O.	"Buffet"	TOTAL Basis Std. Cases
45,868	25,586	2,525	67,652	1959-60	190,594	77,870	197,121

PACIFIC CANNED OYSTERS, equivalent of standard cases of 48 No. 1 E.O. packed in -

1959	125,251
1958	131,266
1957	128,493
1956	109,559
1955	124,497
1954	100,687
1953	114,687
1952	112,415
1951	132,140
1950	120,742
1949	113,989
1948	83,489
1947	57,205
1946	89,050
1945	3,184
1944	none
1943	583
1942	72,315
1941	178,445
1940	148,870
1939	112,549
1938	111,348
1937	110,872
1936	118,853
1935	88,062
1934	68,323
1933	32,315
1932	12,233
1931	7,930

PACIFIC CANNED OYSTER STEW, by seasons, basis standard cases of 48 No. 1 E.O. cans.

1958-59	216,683
1957-58	268,907
1956-57	273,288
1955-56	182,179
1954-55	170,058
1953-54	134,111
1952-53	78,536

Plantings of Imported Pacific Oyster Seed

YEAR	WASHINGTON				OREGON			California	British Columbia	TOTAL	YEAR
	Willapa Harbor	Grays Harbor	North Puget Sound	South Puget Sound	Coos Bay	Yaquina and Alsea	Tillamook				
1947	22,933	5,230	6,025	4,117	8,200	. . .	7,157	750	(a) 2,292	56,704	1947
1948	14,685	1,150	5,562	1,962	3,400	1,550	1,005	850	2,675	32,839	1948
1949	17,357	7,425	6,429	4,748	290	1,930	2,500	350	4,844	45,873	1949
1950	16,512	1,550	6,830	5,745	4,425	1,300	3,575	565	5,204	45,706	1950
1951	18,569	2,250	8,685	7,119	6,749	1,500	1,274	350	(b) 5,404	51,900	1951
1952	40,526	. . .	15,335	7,954	455	. . .	5,625	250	(c) 3,584	73,729	1952
1953	31,669	4,900	22,583	(d)	. . .	. . .	(e) 8,810	250	1,435	69,647	1953
1954	32,087	7,325	12,210	10,528	. . .	. . .	(e) 953	2,526	1,576	67,205	1954
1955	30,424	846	8,132	11,273	250	176	386	9,850	(f) 1,875	63,212	1955
1956	50,113	1,333	6,155	16,458	. . .	. . .	(e) 1,000	24,538	3,240	102,837	1956
1957	22,388	6,066	6,652	(g) 9,035	. .	. .	(e) 1,143	11,200	3,382	59,866	1957
1958	16,083	5,610	1,708	(g) 15,945	. . .	. . .	(e) 2,619	11,830	3,360	57,155	1958
1959	21,342	7,300	472	13,004	. . .	. . .	(e) 5,199	9,460	1,270	58,047	1959
1960	19,152	6,023	1,129	10,000	. . .	. . .	(e) 2,639	7,500	1,000	47,441	1960

(a) Includes 100 cases planted in Alaska. (b) Includes 4 cases planted in Alaska. (c) Includes 7 cases planted in Alaska. (d) Included with North Point Sound.
(e) Includes all Oregon Coast points. (f) Includes 18 cases planted in Alaska. (g) Includes 260 cases transshipped to Alaska in 1957 and 550 to Alaska in 1958.

NOTE: Seed plantings in 1960 include 1,200 cases of Kumamoto seed. Distribution of 1960 plantings is estimated.

sale primarily for the United States market, while the canned product is for the domestic trade in Japan, but also for export throughout the world.

The Hiroshima plant was built by Nichiro with the technical cooperation of Coast Oyster Co. of South Bend, Wash., largest factor in the oyster industry on the Pacific Coast of the United States.

Exclusive world-wide distribution of Nichiro's canned and frozen oyster products is handled through Coast.

● Nichiro Gyogyo K.K. is the largest Japanese salmon canning company, and perhaps the largest salmon canner in the world. In contrast with other leading fishery corporations in Japan, Nichiro in the past has not diversified widely, but recently decided to expand into oysters. Reasons for this selection were several: (1) Oysters provided a field which would lead to more productive utilization of Japan's domestic resources, while making significant contribution to the national economy and export trade; (2) it was a field in which Japan's coastal waters appeared to offer almost unlimited potential for such expansion as might be indicated by growth of the business based on the new plant in Hiroshima.

● The Nichiro undertaking in oysters is notable from several standpoints: (1) the plant was designed and built in full for the purpose, modern and sanitary in every respect; (2) beside the high standards of the building construction, equipment is of the latest type from the standpoint of sanitation and operating efficiency. The refrigeration compressors and ice-maker are of United States manufacture, the ice flake maker being a North Star unit, while the main compressors—five in number—are Carriers.

(3) Perhaps the most significant aspect of the entire operation, apart from the individually frozen oysters, are the facilities provided for sanitary standards and quality protection. Thus, oysters are washed before entering the building in a high-pressure spray of chlorinated water. Then as they enter the building they pass beneath the North Star flake ice machine, where ice made from water of the highest drinking water standards of purity is mixed with the shell oysters before they are discharged into the concrete bins from which they feed down to the shucking tables. Ice-oyster content is calculated promptly to bring the oysters in the bins to below 50° F., and to maintain such temperature until the oysters are shucked.

WASHINGTON RAZOR CLAM PRODUCTION

YEAR	COPALIS BEACH			GRAYLAND BEACH			LONG BEACH			KALALOCK, etc.	Total Catch All Beaches
	(Pounds)			(Pounds)			(Pounds)				
	# of Digs	Total Catch	Per Dig	# of Digs	Total Catch	Per Dig	# of Digs	Total Catch	Per Dig	Total Catch-Pounds	(Pounds)
1937	20,695	546,486	26.4	9,026	285,317	31.6	2,986	99,591	33.4	46,478	997,872
1938	37,064	1,366,441	36.9	20,765	882,619	42.5	9,410	364,383	38.7	44,670	2,650,355
1939	23,903	846,633	35.4	11,182	433,796	38.7	11,321	653,992	57.7	30,692	1,965,113
1940	25,343	604,338	23.8	13,582	347.435	25.5	25,115	1,159,123	46.1	14,886	2,125,782
1941	12,389	406,393	32.8	2,643	111,819	42.3	3,307	222,129	67.2	806	741,147
Reserve	7,965	347,693	43.7	...	...	...	...	...	...	...	...
1942	5,088	143,148	28.1	814	26,283	32.3	3,941	174,104	44.2	*	343,535
1943	5,284	164,907	31.2	1,005	24,728	24.1	799	20,627	25.8	*	210,262
1944	8,485	409,374	48.2	2,705	105,425	38.9	2,651	108,030	40.7	*	622,829
1945	14,519	1,124,965	77.5	5,289	512,298	96.9	4,255	418,673	98.4	1,235	2,057,171
1946	12,387	922,516	74.5	10,548	461,773	43.8	11,109	663,776	59.8	*	2,048,065
1947	16,681	1,164,321	58.5	6,564	305,122	46.5	9,105	544,657	59.7	*	2,014,100
1948	18,263	687,612	37.6	6,642	249,869	37.6	8,489	268,862	31.8	50,350	1,256,693
1949	14,496	475,649	32.8	5,412	177,227	32.7	1,220	42,169	34.5	26,686	721,731
1950	11,878	231,879	26.9	...	...	...	...	...	...	5,303	237,182
1951	14,583	700,173	48.0	...	...	...	...	...	...	...	700,173
1952	17,630	651,733	37.0	...	...	...	...	...	...	39,595	691,328
1953	13,203	504,050	38.1	...	...	...	724	60,267	83.2	28,863	593,180
1954	8,407	550,524	63.2	...	...	...	152	11,759	77.3	35,018	597,301
1955	7,859	614,061	78.1	...	...	...	224	24,666	110.0	110,682	749,409
1956	10,054	416,884	41.3	...	...	...	**	92,947	**	187,028	696,859
1957	9,180	521,603	56.8	...	...	...	658	79,814	121.3	155,796	757,213
1958	12,549	790,201	63.0	...	...	...	543	58,003	106.8	181,343	1,029,547
1959	16,924	731,936	68.5	...	...	...	655	47,693	72.8	225,336	1,004,965
1960	9,021	189,995	21.1	...	...	...	6	190	31.2	217,909	408,094

NOTE: In 1950 the catch per dig was computed only on pounds sold, which equaled 5,205 digs for 140,017 lbs. 91,862 lbs. of the quota were not sold and the number of digs for this unsold portion does not agree with the digs and pounds sold.

*The small amount is included with Copalis Beach.

**Not available.

CLAMS

- Pacific clam canning in 1960 continued on a low level of activity, with razor clam operations in Alaska the only element showing any degree of vigor.

Production volume in razor clams actually showed a slight gain over both 1958 and 1959, but the yield came almost wholly from Alaska.

There were several reasons for the depressed condition of Pacific clam canning, and they were primarily competitive, with a low level of abundance in Washington and Oregon playing a part.

Strong competition from Atlantic Coast sea clams, produced by the offshore dredging method developed so successfully a few years ago, has rendered uneconomic most of the Pacific hardshell and some of the razor clam canning enterprises.

Hardshell canning has been further hit by imports from Japan and Hong Kong, imports whose price and generally good quality make competitive operations by Pacific North Americans almost out of the question.

The result, then, is a turn to the marketing of Pacific hardshell clams —and also razors to some extent— fresh and in the shell, a trade which seems to be well sustained by steady population growth in the Pacific states.

- Alaska razor clam operations maintained a fairly steady tenor in 1960, with the Alaska Packers Association, which acquired the Halferty properties from the late G. P. Halferty, moving strongly to achieve full utilization of the resource, as well as of its trade position in this new product line.

- Efforts to extend the Pacific ocean clam fishery to sea, after the manner of the notable development on the Atlantic, have not produced conclusive results and the utilization of the hardshell clam resources of Washington, Oregon, British Columbia and Alaska for canning has languished; in large part because of growing competition of Oriental and Atlantic products.

PACIFIC CLAM PACK IN PREVIOUS YEARS

YEAR	(Basis 48 halves per case)				YEAR	(Basis 48 halves per case)			
	RAZOR CLAMS					HARD SHELL CLAMS			
	Alaska	Wash. & Oregon	B.C.	TOTAL		Alaska	Wash.	*B.C.	TOTAL
1929	28,270	63,526	13,050	104,846	1929	....	19,514	21,547	41,061
1930	33,937	54,746	12,623	100,324	1930	600	27,735	18,738	46,073
1931	43,460	53,412	8,658	105,440	1931	2,600	19,516	18,043	40,159
1932	69,147	46,002	8,457	123,606	1932	76	13,264	9,201	22,541
1933	38,213	38,772	.	76,985	1933	....	22,438	20,432	45,163
1934	31,655	30,232	...	61,656	1934	....	25,880	11,630	37,510
1935	34,864	53,057	.	87,921	1935	....	37,249	20,418	57,667
1936	29,900	49,692	..	79,592	1936	....	45,222	25,158	70,380
1937	29,044	20,373	.	49,417	1937	....	45,788	25,174	70,962
1938	42,305	64,167		106,472	1938	....	40,007	44,310	84,317
1939	35,258	60,205	....	95,463	1939	....	39,165	10,862	50,027
1940	41,556	51,705	...	93,261	1940	....	35,250	7,151	42,402
1941	22,736	27,629	....	50,365	1941	....	22,380	6,772	29,152
1942	46,703	3,999	5,568	56,270	1942	....	10,972	12,240	23,212
1943	48,692	1,732	5,821	56,275	1943	2,457	2,902	11,642	§34,001
1944	47,050	3,512	**	50,562	1944	11,630	19,863	**	§71,024
1945	43,476#	38,152	**	81,628	1945	6,029	11,752	4,693	22,474
1946	51,594	51,063	**	102,657	1946	14,441	20,574	23,867	98,826
1947	24,726	42,970	...	67,696	1947	323	15,301	**	15,624
1948	34,425	11,720	....	46,145	1948	92	12,600	....	12,692
1949	42,103	4,482	923	47,518	1949	125	16,449	9,794 ½	26,368 ½
1950	54,534	849	1,583	56,966	1950	....	8,919	8,456	17,375
1951	44,082	11,014	3,196	58,292	1951	15	13,981	15,460	29,456
1952	25,960	9,843	***	35,803	1952	179	§§13,544	24,592	38,315
1953	39,234	8,449	5,183	52,866	1953	164	§§13,281	19;249	32,694
1954	31,463	5,541	8,413	45,417	1954	1,634	22,336	23,717	47,687
1955	45,931	10,386	.	60,117	1955	14	24,755	6,780	31,549
1956	34,267	6,005	3,539	43,811	1956	....	§22,117	**	22,117
1957	32,716	6,054	3,076	41,846	1957	....	§27,696	**	27,696
1958	11,540	6,545	2,907	20,992	1958	....	4,634	**	4,634
1959	21,001	4,405	N.A.	25,406	1959	....	§§21,354	N.A.	21,354
1960	28,609	#	N.A.	28,609	1960	...	N.A.	N.A.	28,609

§Total includes clams canned in California from clam meats produced in Mexico.

#Combined with Alaska.

§§Includes a small amount canned in California.

*British Columbia figures for years 1932 to 1947 and 1951. 1952 and 1953. include some Razor Clams.

**British Columbia totals not available.

***Included with Hardshell.

NOTE: Data for current year from original sources. Data for previous years are from official sources, converted to Pacific standard cases of 48 Halves.

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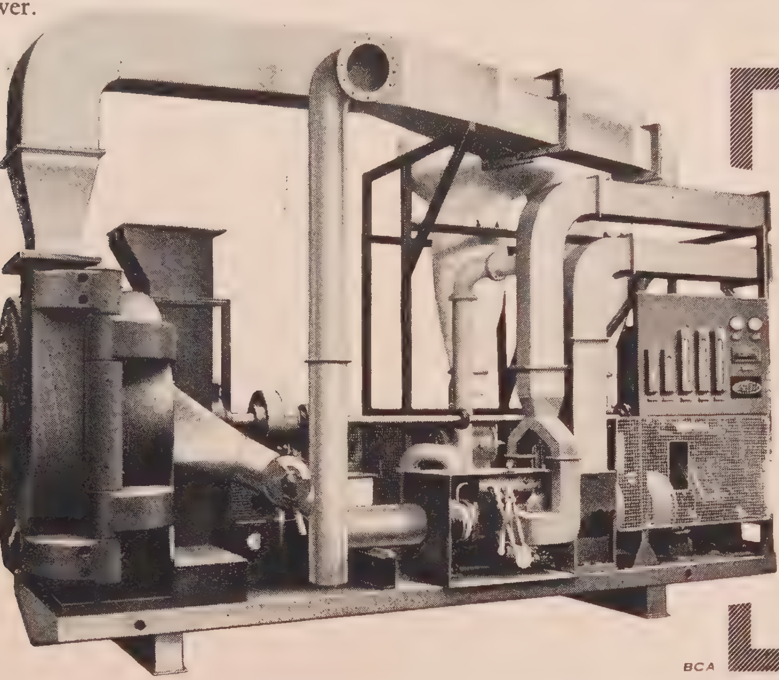
Rosedowns design and manufacture standard dryer grinder installations producing fish meal of proved high quality. The units are fitted with gas turbine engines to produce both power and heat, alternatively hot air furnaces can be used with electric motors or diesel engines providing the power.

The dryer grinder units can be arranged to work with steam cookers, hot air cookers or screw presses—all of which Rosedowns manufacture and supply.

Standard units are available for processing up to 5,000 lbs. of raw fish or offal per hour.



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BY-PRODUCTS

● Paced by Peru, the world leader in fish meal manufacture, supplies of this commodity made in 1960, and at least in part of 1959 as well, ran far ahead of the market's ability to consume the protein concentrate, good as it was, and as greatly needed nutritionally.

Objective observers generally believe that education of users and refinement of distribution will soon send to market profitably all the fish meal the world currently can produce—but for the immediate present there is just too much fish meal being manufactured.

From international recognition of this fact in 1961 will come determined efforts at cut-back, efforts in which Peru is taking the lead by official limitation of its 1961 export trade to 600,000 metric tons—but this is a staggering quantity of fish meal.

Will Peru's action suffice to save the situation?

That is a question being asked around the world.

● It is doubtful if ever in the history of man's modern fishing industry has a market situation been so world-wide in its effect, so international in its implications, as that which arose as result of the 1959-60 over-production of fish meal.

Throughout the world prices fell to ruinous levels, bringing losses in millions to operators.

It may be remembered that in November, 1957, *Pacific Fisherman* devoted an entire issue to "The Fisheries of Peru—New Forces in a World Industry"; and then on its cover asked the question: "What Will They Mean to You?"

With a generous measure of pride this journal notes the timeliness of the article and of the suggestion in its title; as well as the pointed query which accompanied it.

In truth the Fisheries of Peru in the ensuing years have proven they are "New Forces in a World Industry."

Capitalizing on the incredible abundance of the fishery resources of the Peruvian current, Peru rose in months to world leadership in the manufacture of one of the world's greatest protein feedstuffs, from which Man draws increased size and growth and health in his swine and poultry and pets.

● Along with its abundant fish supply close to its coastal harbors with their scores of fish reduction plants, Peru has a low cost structure, in fuel, in labor and in freight, moving most of its meal to market wholly by water transportation.

Looking to its national prosperity in the longer future, Peru is realistically steadying its business. True, the 600,000-ton export quota for 1961 is greater than the volume of meal Peru has sold abroad in past years, with their market collapses; but it is believed that establishment of a ceiling on its exports, the increased recognition of the need for rationalized distribution, and the market's acceptance of fish meal in its new volume of availability, will result in increased stability of trading at somewhat higher price levels.

● United States imports of fish meal totaled 97,333 tons for the period January-September 1960. These imports were nearly 23,000 tons less than in the same period of the previous year. Imports from Peru (over 51,000 tons) made up 52 percent of the total, while Canada followed with the next largest amount imported (28,000 tons). The remaining 18,000 tons were received from Chile, Union of South Africa, Angola, and other countries.

Pacific Coast Fish Oil and Meal-1960

Regions	Fish Meal Tons	Herring Oil Gallons	Sardine Oil Gallons	Other Fish Oils Gallons	Total Oil Gallons	Regions
Alaska	4,126	1,031,760	...	...	1,031,760	Alaska
British Columbia	25,463	2,326,210	...	306,000	2,632,210	British Columbia
Washington	1,251	...	...	98,347	98,347	Washington
Oregon	1,800	...	...	110,000	110,000	Oregon
California	25,100	...	161,654	532,205	693,859	California
TOTALS	57,740	3,357,970	161,654	1,046,552	4,566,176	TOTALS

Canadian Oil figures have been converted from Imperial Gallons to American Gallons.

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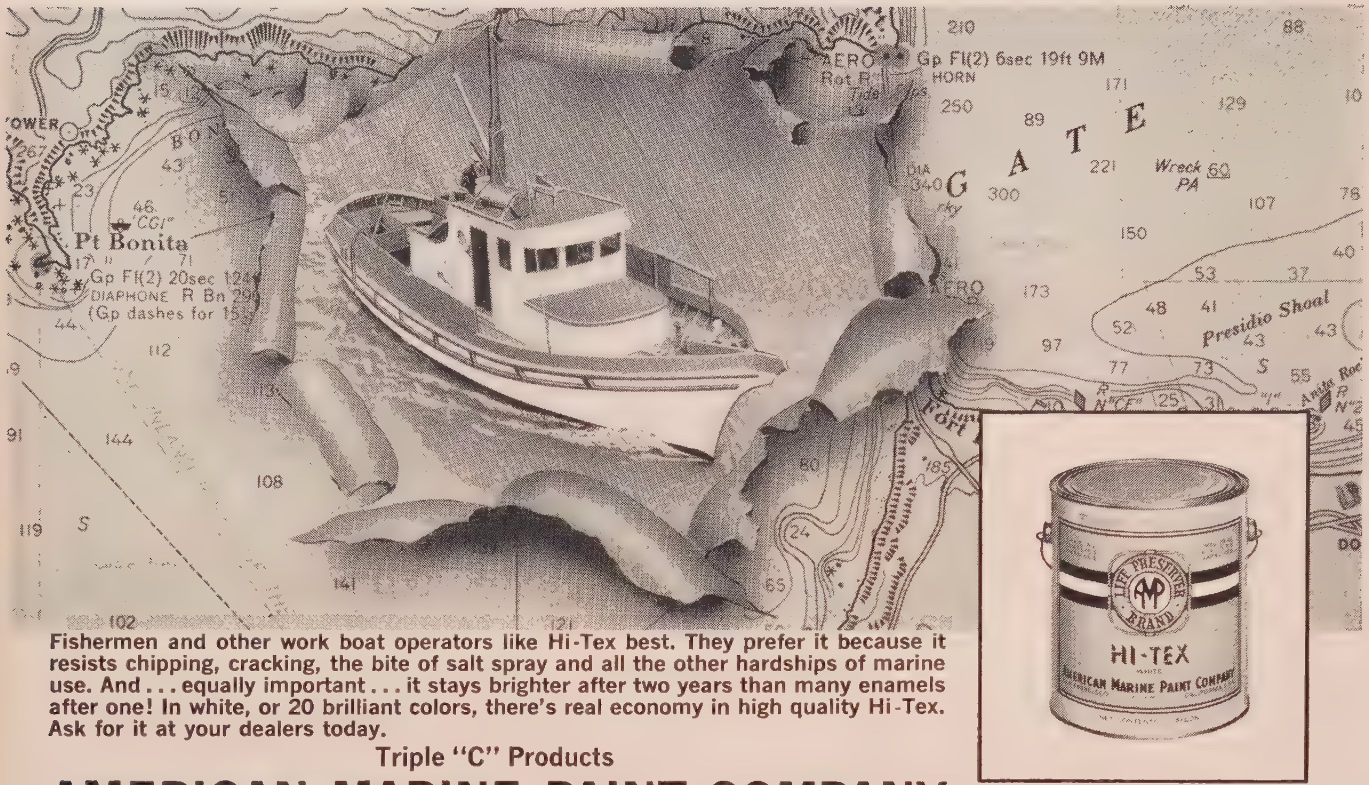

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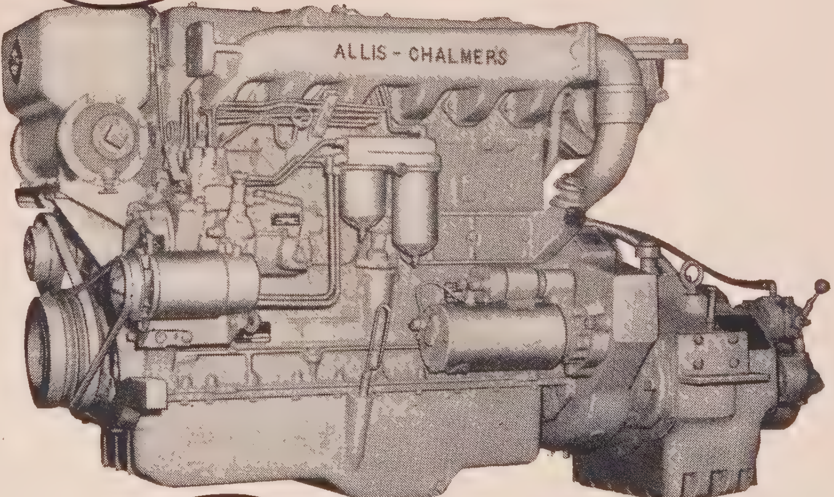

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140 shp @ 2200 rpm for light duty,
100 shp @ 1800 rpm for heavy duty.

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***POWER* FOR A GROWING WORLD**

- Depressed condition of the world market for fish meal reflected on Pacific by-products manufacturing in 1960, bringing the volume of oil and meal manufactured to the lowest levels in a long period.

British Columbia's herring fishery in particular was crippled, being shut down through most of 1960 as result of inability of the fishermen and operators to agree on fish prices at which both felt they could afford to operate.

Eventual settlement late in 1960 was followed by excellent fishing.

- California's fish oil and meal business again in 1960 continued wholly in the by-product basis. With a limited catch of sardines, all plants canned the legal requirement of at least 13.5 cases per ton of fish received, and the pack generally exceeded this figure.

Thus the sardine oil anl meal production of the state was extremely low. With tuna canning at a new high, and mackerel packing approaching closely the million-case level, the yield of by-product tuna-mackerel oil and meal was excellent.

With its relatively low-cost material in the form of cannery offal, packing plant by-products manufacturing is not restricted as seriously by current market conditions as is the utilization of whole fish caught primarily for reduction purposes.

- Alaska was able to maintain a fair volume of herring production in the Southeastern area, where the resource was in good condition and the regulations were not discouraging to industrial utilization.

In Washington state, with a restricted salmon fishery and fur animal feeds diverting much of the fish house waste, reduction was decidedly limited.

Columbia River tuna canning contributed a substantial and consistent amount of offal from which volume was maintained near the normal level in spite of a reduced salmon catch.

- Alaska in 1960 exercised full authority over its fisheries for the first time, and maintained a liberal attitude toward the utilization of the herring resource for direct economic purposes —food, industrial products, and bait.

In Prince William Sound and the Kodiak Island Area almost no limitation was laid on herring fishing or use, save that during the period of salmon fishing herring fishing was not permitted in any waters closed throughout the year to fishing for salmon.

Southeast Alaska herring seasons were unusually liberal, running from June 1 through February following. Fishing by means of purse seines, beach seines and gillnets was generally permitted, with some special limitations on purse seine bait fishing in certain areas and at special seasons.

Quotas for herring fishing for purposes other than bait, and with gear other than gillnets were set for 1960 as follows, and apparently are being continued in 1961:

1. Not more than 10,000 short tons from Clarence Strait, Sumner Strait and West Coast Districts, of which not more than 5,000 tons may be taken from southern Clarence Strait.

2. Not more than 22,500 short tons from the Eastern and Western Districts, of which not more than 6,250 tons may be taken on the west coasts of Baranof and Chicagof Islands. However, after July 15 an additional 10,000 tons may be taken in the southern portion of these districts; and a further additional 2,000 tons from Icy Strait, Lynn Canal and northern Chatham Strait.

- Effective in 1960 the International North Pacific Fisheries Convention, to which the United States, Canada and Japan are parties, was amended to release from abstention by Japan the herring fishery outside of Alaska territorial waters.

Acting under this release, Japan did authorize one of its factoryships operating in Bering Sea to fish for herring in 1960. The vessel evidently was entirely successful in taking a commercial volume of fish. Its satellite fishing vessels are believed to have used midwater trawls in part at least in their

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PACIFIC COAST FISH REDUCTION PRODUCTS

Fish Oil

Fish Meal

Fish Oil (Gallons)							Fish Meal (Tons)					
Alaska	Wash	Oregon	Calif	British Columbia	TOTAL	Year	Alaska	Wash	Oregon	Calif.	British Columbia	TOTAL
232,376	116,282	20,000	26,063	. .	394,721	1916	1,594	.	100	535		2,229
231,142	205,511	25,000	176,293	49,784	686,730	1917	1,858	3,186	190	3,481	1,220	9,935
147,716	98,711	35,200	346,724	64,060	692,411	1918	600	1,885	95	8,734	1,977	13,291
170,340	90,921	25,000	514,262	65,945	866,468	1919	1,218	1,114	350	11,153	1,847	15,682
720,118	21,850	23,175	611,585	66,802	1,443,530	1920	3,928	352	136	8,856	466	13,738
99,948	170,008	48,000	336,738	53,640	708,334	1921	678	1,354	300	6,317	489	9,138
454,938	157,555	14,000	547,050	90,553	1,264,096	1922	1,958	1,216	40	9,027	911	13,152
915,143	135,145	24,000	951,888	196,381	2,242,557	1923	3,635	992	150	9,238	823	14,838
1,193,705	79,028	42,000	2,350,722	289,651	3,955,106	1924	5,560	607	275	15,328	1,709	23,479
2,391,832	97,890	47,400	3,150,041	1,020,607	6,707,770	1925	9,302	1,395	300	22,936	4,551	38,484
3,018,675	78,352	58,000	2,123,928	2,555,485	7,834,440	1926	12,093	822	325	15,767	10,543	39,550
2,067,041	81,801	65,000	2,618,490	3,863,347	8,695,679	1927	7,704	956	500	21,374	16,659	47,193
2,585,990	79,347	54,000	3,749,302	4,877,059	11,336,698	1928	10,713	670	425	28,390	15,331	55,529
3,415,154	131,059	62,000	6,548,126	4,066,584	14,222,923	1929	13,353	1,554	460	43,496	21,208	80,071
3,601,305	121,602	53,600	5,842,763	4,767,120	14,386,390	1930	12,847	1,046	400	36,276	17,542	68,111
2,207,686	128,769	36,000	3,924,692	3,485,287	9,782,434	1931	8,704	714	228	22,440	19,561	51,647
2,632,154	79,219	33,000	5,125,399	1,857,065	9,726,837	1932	10,168	757	143	27,500	15,450	54,018
3,195,294	111,098	33,500	10,708,448	935,582	14,983,922	1933	11,435	1,085	210	58,879	6,752	78,361
3,741,604	116,967	38,000	18,910,687	2,492,230	25,299,488	1934	14,341	876	280	95,193	12,654	123,344
3,853,243	110,960	1,144,374	20,695,423	2,644,214	28,448,214	1935	15,818	1,032	4,763	103,772	16,090	141,475
3,823,137	304,975	552,497	24,511,950	2,802,678	31,995,237	1936	15,051	1,687	2,864	126,143	21,948	167,693
5,588,038	942,548	689,159	14,823,508	3,942,576	25,985,829	1937	19,636	4,012	2,775	93,897	25,630	145,950
4,587,513	1,231,144	718,830	16,065,029	4,023,798	26,626,314	1938	17,066	4,977	2,933	97,451	21,006	143,433
4,837,298	830,480	833,300	18,980,527	2,068,779	27,550,384	1939	17,477	4,651	3,933	105,169	19,468	150,698
2,142,674	180,830	114,717	13,214,990	3,388,442	19,041,653	1940	8,144	1,528	592	86,137	31,899	128,300
2,894,248	552,491	398,235	17,677,198	3,304,657	24,290,751	1941	11,740	4,168	2,969	102,812	24,312	146,001
892,518	144,691	33,214	12,686,640	2,255,908	16,012,971	1942	3,540	1,608	861	79,003	26,474	111,486
1,644,142	586,102	58,000	14,016,179	3,738,818	20,043,241	1943	7,280	3,231	1,365	86,151	24,919	122,946
2,355,010	65,460	50,000	18,271,859	3,548,422	24,290,751	1944	8,777	901	1,200	96,853	20,852	128,583
2,835,173	221,218	26,000	12,062,111	2,875,323	18,019,825	1945	11,188	2,894	907	78,653	21,123	114,769
3,544,907	341,423	133,727	4,902,625	1,431,600	10,354,282	1946	15,869	3,826	1,633	52,895	10,561	84,784
3,779,675	200,801	246,184	2,633,604	1,778,327	8,415,449	1947	14,232	1,631	2,040	37,065	12,773	62,611
3,501,631	210,923	114,928	2,833,197	3,427,273	10,087,952	1948	12,683	3,269	1,228	44,450	31,087	92,717
668,086	207,000	26,700	6,725,255	2,880,219	10,507,260	1949	3,608	3,200	1,786	66,504	31,419	106,517
3,033,184	110,960	23,085	7,202,130	4,015,024	14,384,383	1950	13,694	1,032	1,260	70,769	34,174	120,929
1,439,865	164,000	24,000	2,735,590	4,087,136	8,450,591	1951	6,671	1,178	1,150	41,498	34,235	84,732
803,467	130,000	19,000	1,280,994	250,465	2,483,926	1952	4,590	897	744	37,149	4,764	48,144
500,713	169,000	53,000	814,221	3,823,436	5,360,370	1953	2,544	2,690	1,607	25,121	26,944	58,906
676,570	244,343	51,380	1,408,245	4,776,395	7,156,933	1954	3,069	5,635	1,519	30,278	31,143	71,644
1,041,989	138,000	72,000	1,502,797	3,592,157	6,346,943	1955	4,480	3,200	1,800	30,740	25,104	65,324
1,723,350	•93,000	86,000	1,190,259	6,691,082	9,783,691	1956	7,919	2,100	2,000	30,664	51,992	94,675
1,718,147	139,000	83,000	924,593	3,459,800	6,324,540	1957	7,865	1,676	1,600	29,065	27,214	67,420
1,511,300	228,313	90,000	1,438,738	5,269,109	8,537,460	1958	6,484	2,167	1,200	28,994	35,173	74,018
1,778,248	192,328	120,000	751,199	6,292,276	9,134,051	1959	8,094	2,477	1,600	24,164	50,233	86,568
1,031,760	98,347	110,000	693,859	2,632,210	4,566,176	1960	4,126	1,251	1,800	25,100	25,463	57,740

herring fishing.

Whether further development of a high seas fishery for herring off the Alaska coast can be anticipated by the Japanese is problematical, although it is considered altogether probable that Japan in 1961 will extend its factoryship operations outside of Bering Sea and onto the Continental Shelf south of the Alaska Peninsula.

- The Japanese factoryship which is believed to have been devoted in large part to the utilization of Bering Sea herring is reported to have produced 6,024 metric tons (6,626 short tons) of fish meal and 875,420 gals. of oil.

The four Japanese factoryships devoted primarily to the manufacture of fish meal from trawl fish are reported in 1960 to have made 51,512 metric tons (56,663 short tons) of high-grade fish meal and 514,280 gals. of fish oil.

- Fisheries fortune or ill-fortune generally affects one area, one region, one country, one coast, one fishery, one species or one market.

Rarely, or perhaps never until the present, has an industry throughout the world been affected by an overall economic trend, producing the same condition in Southwest Africa as in Northeast Canada; and in Chile and Peru as in Norway and Denmark.

But today—in 1960 and running into 1961—the fish oil and fish meal manufacturing business of the entire world is beset; and no single subject is of as wide interest the world around as the ills of the fish reduction business.

Reasons for this vary somewhat, but basically they are these:

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1. Fish meals and fish oils are basic commodities. They compete with other protein concentrates and fats and oils of animal or vegetable origin in all markets.

2. All fish oils and meals sell on the basis of certain technical specifications, and thus the products of one country may be in direct competition with those from a distant part of the world. Regional distinctions are of minor importance.

3. Many species of fish, and the offal and waste from many others, are used in fish meal and oil manufacture. A failure in one species does not produce wide scarcity, and the varied character of the supply insures against disastrous effects from a localized failure.

4. These are established and accepted products. They react readily to the influences of supply and demand, faster than their markets can grow to absorb greater availability without collapsing prices.

● For an industry that was virtually non-existent, the herring fishery of British Columbia last year kicked up an inordinate volume of discussion and controversy. There was lots of talk, but practically no fishing until the year was almost spent.

Fishermen and operators were at loggerheads until late November and, while many proposals and counter proposals were made during the preceding months it was not until four weeks before Christmas that a price offer of $8.80 was accepted and the fleet — or a part of it — went to sea.

Paralysis of the B.C. herring industry was caused by a situation several thousand miles away—in Peru, where the anchovy fishery underwent explosive expansion. It soon became apparent to B.C. meal processors that they could not compete with the product of South America's west coast.

● These were some of the grim facts faced by B.C.'s industry, which in recent years had not been exceptionally profitable even under relatively favorable conditions. But operators and fishermen could not agree on how to meet the crisis. Fishermen who had signed an agreement with the packers on a basis of $13 a ton were not disposed to tear up the agreement and settle for something less because they maintained that the $13 figure was realistic when related to the cost of operation.

The price of $13 a ton was established in the summer of 1958 following a nine months' strike. At that time herring meal was selling at $2.30 a unit and herring oil at 9 cents a pound. It was claimed that the companies thus received $45.55 for the manufactured products from a ton of herring.

But by the fall of 1959 the price of herring meal was down to $2.05 per unit and herring oil to 7 cents a pound, so the gross returns to the companies, according to the Fisheries Association of B.C., was $38.77 a ton. Operators decided to take a gamble and continue to pay $13 a ton until the cost squeeze became excessive. That point was reached when herring meal prices sank to less than $1.50 a unit for meal and 6 cents a pound for oil, bringing a return of less than $30 a ton, or $16 less than the 1958 returns. The plants were closed, and the herring fishery was

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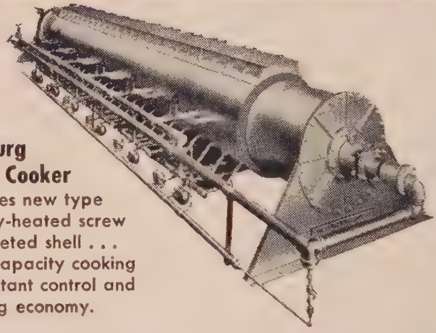
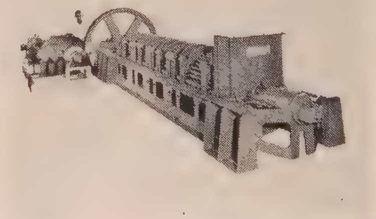
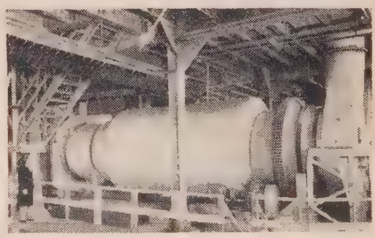
- Centrifugal Oil Separation Equipment
- Fish Freezing and Canning Equipment
- Cookers
- Dryers
- Fans
- Collectors
- Incinerators



Renneburg Indirect Cooker —features new type internally-heated screw and jacketed shell . . . assures capacity cooking with constant control and operating economy.



Renneburg 12' Multi-Stage Press —with Quadro Screw (having highest compression ratio) and variable speed drive, assures maximum oil and moisture extraction . . . 20-30 ton per hr. capacity . . . cleaner operation.



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idle all summer.

Revision of the original price agreement was suggested by the operators reducing the herring labor price from $13 a ton to $8.32 a ton, a reduction of about 36%, according to the fishermen's calculation. The suggested agreement called for elimination of all tendermen from the operation, numbering about 400 in all. It was rejected at first by the fishermen, who countered with a demand on the federal government for an investigation into the herring industry, but agreement was finally reached and fishing was resumed November 20.

WHALING

- The United States' only whaling stations, two located at Pt. San Pablo on San Francisco Bay, didn't do as well in 1960 as the year previously.

Del Monte Fishing Co. received 152 whales as compared to 169 the year before. The 1960 catch consisted of one blue, 77 fin, 39 hump, 10 sperm, 24 sei, and one bottlenose.

Killing whales for Del Monte were the boats *Donna Mae, Allen Cody*, and *Dennis Gayle.*

The Golden Gate Fishing Co. received 120 whales in 1960 as compared to 140 in 1959. The species processed consisted of 30 humpback, 7 sperm, one bottleneck, 16 sei, and 66 fin.

Golden Gate Fishing Co. had two killer boats working for it—*Lynn Ann* and *Sioux City.*

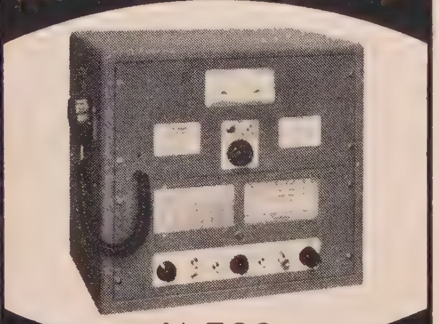
Company officials stated that the reason for the fall off in catch was due primarily to the lack of whales, and secondarily to the fact that the season was unusually windy, with resultant rough water.

The market on frozen whale meat was reported to be good during the year, but the meal and oil market was reported to be poor.

- British Columbia's whaling industry was idle during 1960 as result of inability of British Columbia Packers, Ltd., to operate its Coal Harbour plant under the conditions imposed by the workers' union and world markets.

Early in 1961 the company proposed an arrangement by which it hoped to operate this year under an arrangement with a Japanese company which would provide whale killer boats, some increased handling facilities, and a market in Japan for whale meat.

The proposal was brought under attack at the labor level and at presstime of this Yearbook Number observers felt it was unlikely that the arrangement could be made effective.



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PUERTO RICO

● Puerto Rico's remarkable rise in industrial stature was marked in 1960 by two spectacular fishery developments: Completion of the great tuna cannery of Star-Kist Caribe, Inc., at Mayaguez; and the announcement by the California Packing Corporation, the largest food canner in the world, that it would construct a new tuna cannery at the same city, and immediately adjoining the Star-Kist plant.

National Packing Company, a subsidiary of the Van Camp Sea Food Company, also one of the largest fish canning concerns in the world, for a number of years has been engaged actively in tuna canning at Peutonce, on the south coast of Puerto Rico.

With the completion of the California Packing Corporation tuna cannery three giants of American food packing will be located in Puerto Rico, attracted by the strategic location of this Carribean Island and the tuna potential of the Atlantic and the Carribean Sea.

Puerto Rico is blessed with a particularly strategic situation so far as tuna canning is concerned. It is less than half as far as Southern California from the Pacific waters where the major portion of the American tuna catch is made.

It is on the main steamer route between Japan and the East Coast of the United States by way of the Panama Canal.

It is the closest American territory to Dakar, the leading tuna landing port of the eastern Atlantic.

It is close at hand to numerous islands of British, French, Dutch, and independent sovereignty, where fishing vessels of nationalities other than the United States can trans-ship their cargoes to the American port.

It is the nearest American port to the developing tuna fisheries of the western tropical Atlantic along the coast of South America.

Finally, it enjoys relatively close proximity to the principal tuna consuming markets of the United States. Cost of delivering a case of tuna from Puerto Rico to New York is 50c less than from San Pedro, California, to New York.

● To this combination of strategic influences must be attributed Puerto Rico's rapid rise as a center of tuna canning.

The development there also recognizes the discovery of enormous resources of tuna in the equatorial Atlantic and off the westerly coast of North Africa. Presence of equal resources off the coast of Brazil is indicated.

Another influence in support in the development of tuna canning in Puerto Rico is the attractive tax treatment accorded new industries there. While this preferential is not as important an element as often believed, there is no gainsaying the fact that it provides, as it was intended to do, attraction for industry.

For an extended discussion of Puerto Rican tuna canning development as it was manifest in 1960, reference is made to the October, 1960, issue of *Pacific Fisherman,* which was largely devoted to the new cannery of Star-Kist Caribe, Inc. Similarly, the operations of the National Packing Company and Van Camp Sea Food Company were authoritatively dealt with in *Pacific Fisherman* for July, 1957.

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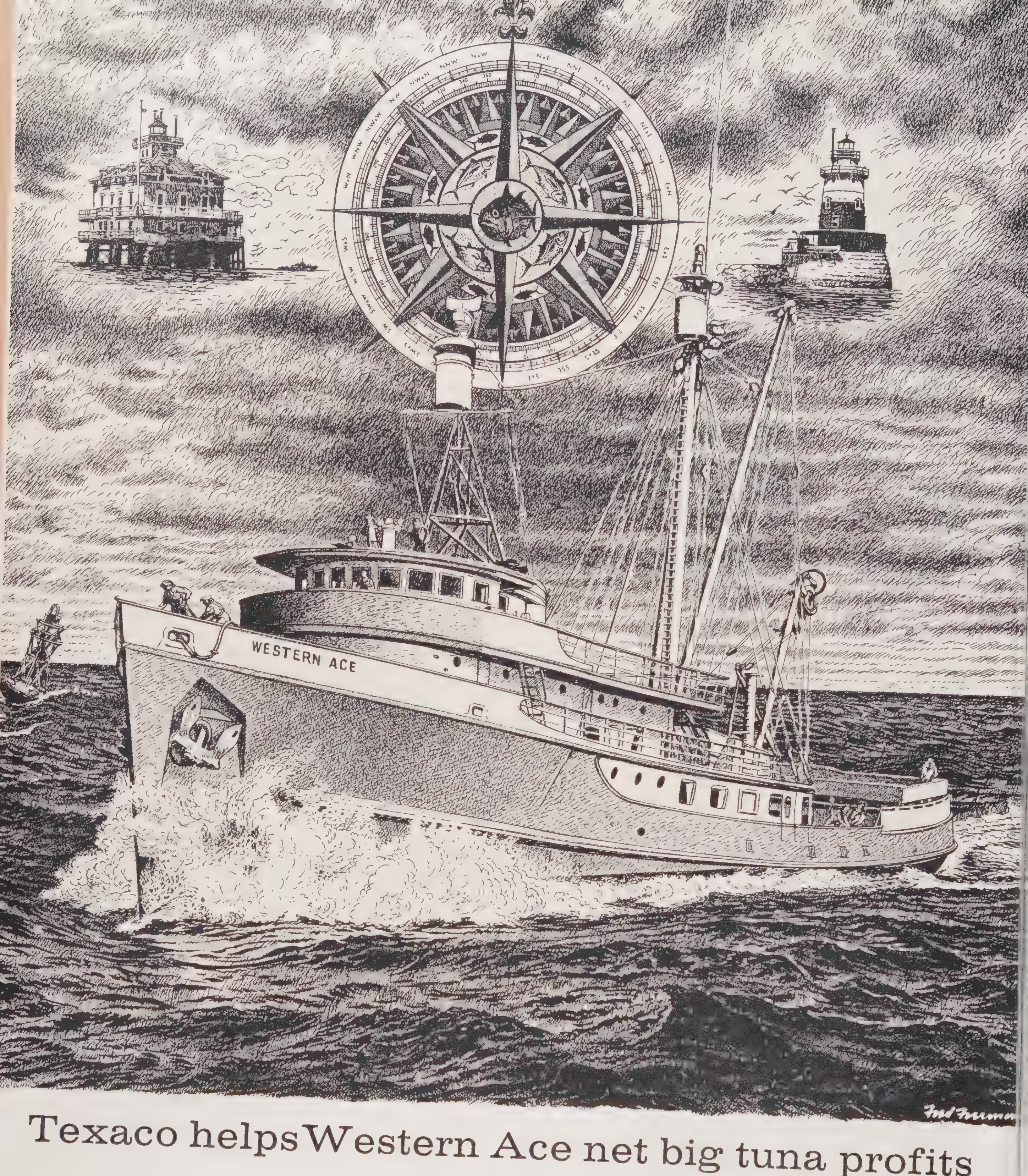
The Cover

- Cover design of this Yearbook Number derives from Pisces, one of the signs of the Zodiak, which the ancient Greeks are believed to have borrowed from the even more ancient Egyptians. Pisces is the 12th and final sign of the Zodiak, is always two fish, and may also be expressed by the three bold strokes dominating our cover.



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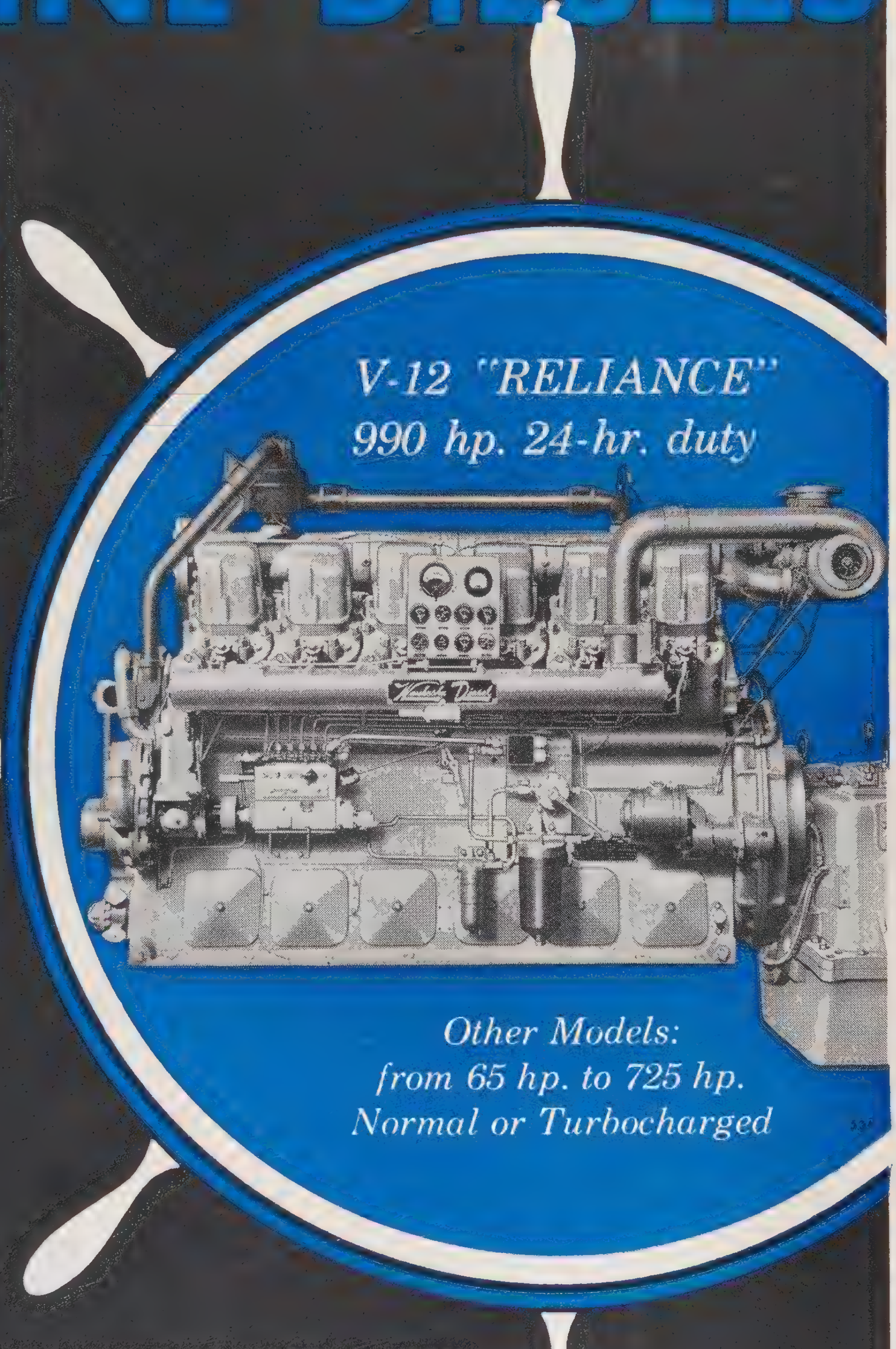

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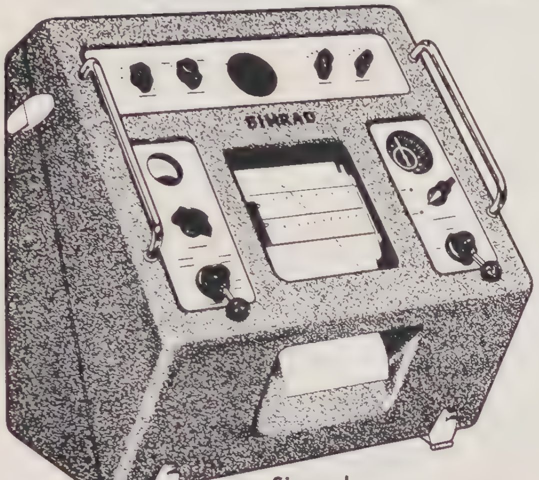

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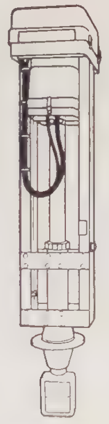

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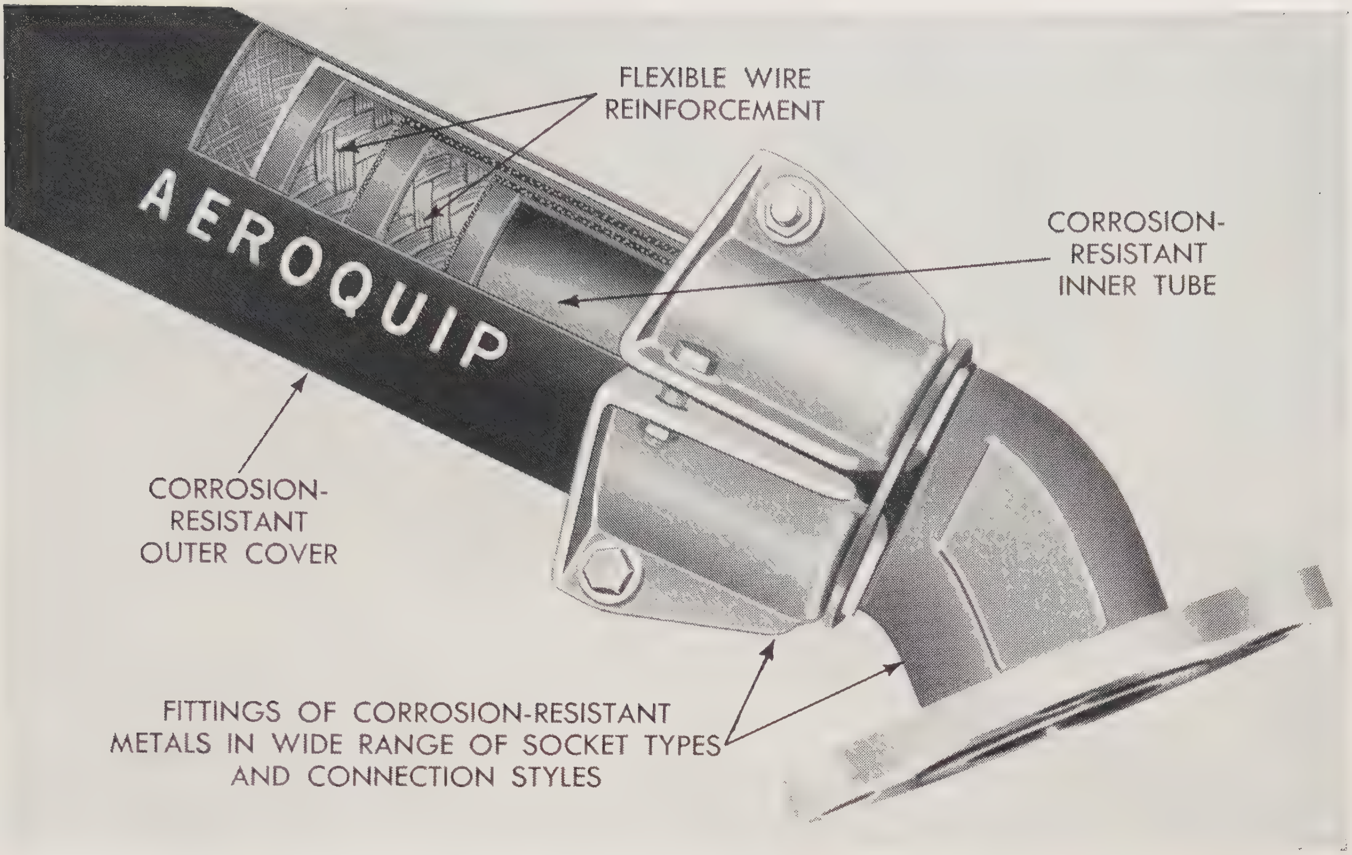
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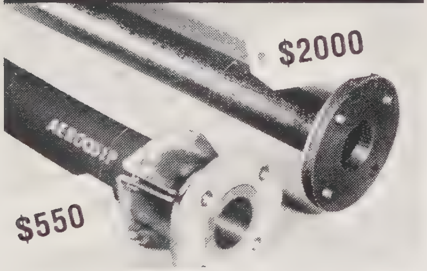

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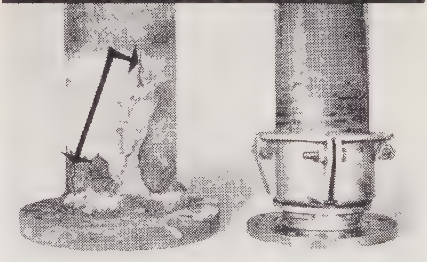

Aeroquip Marine Piping is flexible, absorbs vibration and shock that can cause failures in rigid piping systems. (see arrows).

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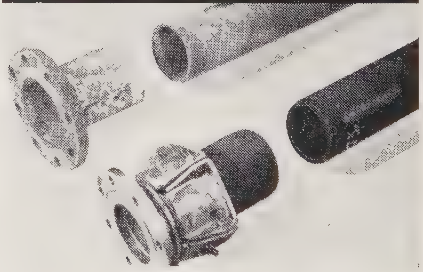

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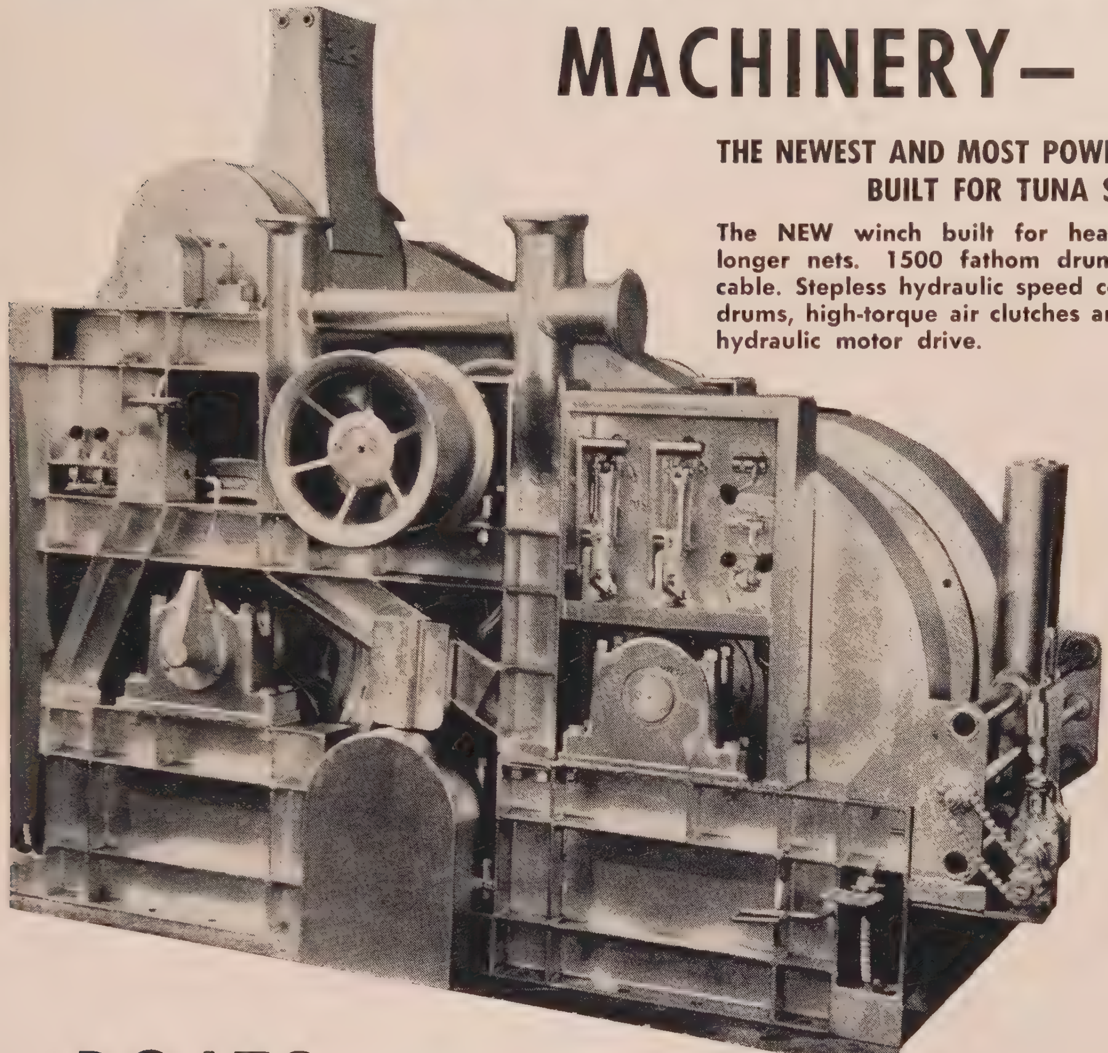

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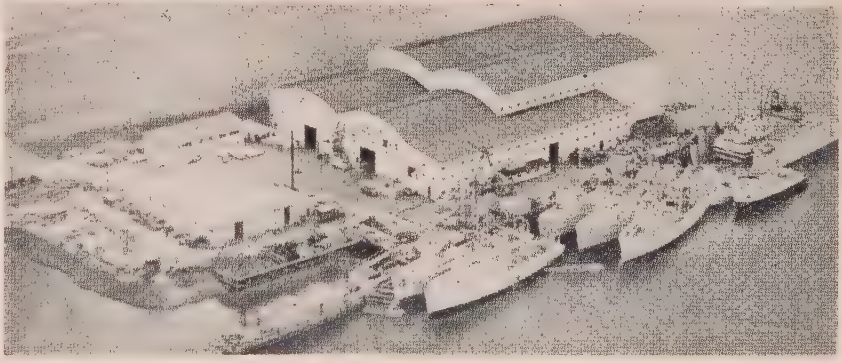

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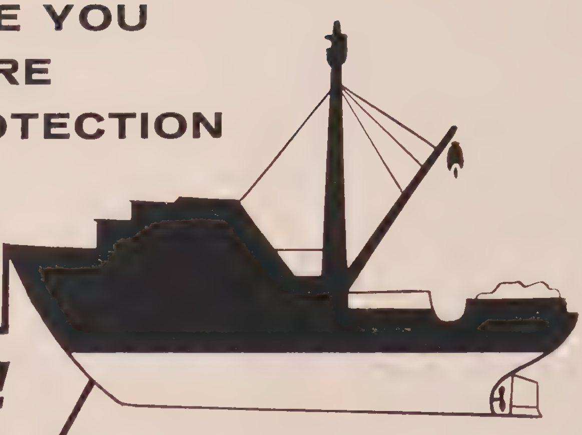

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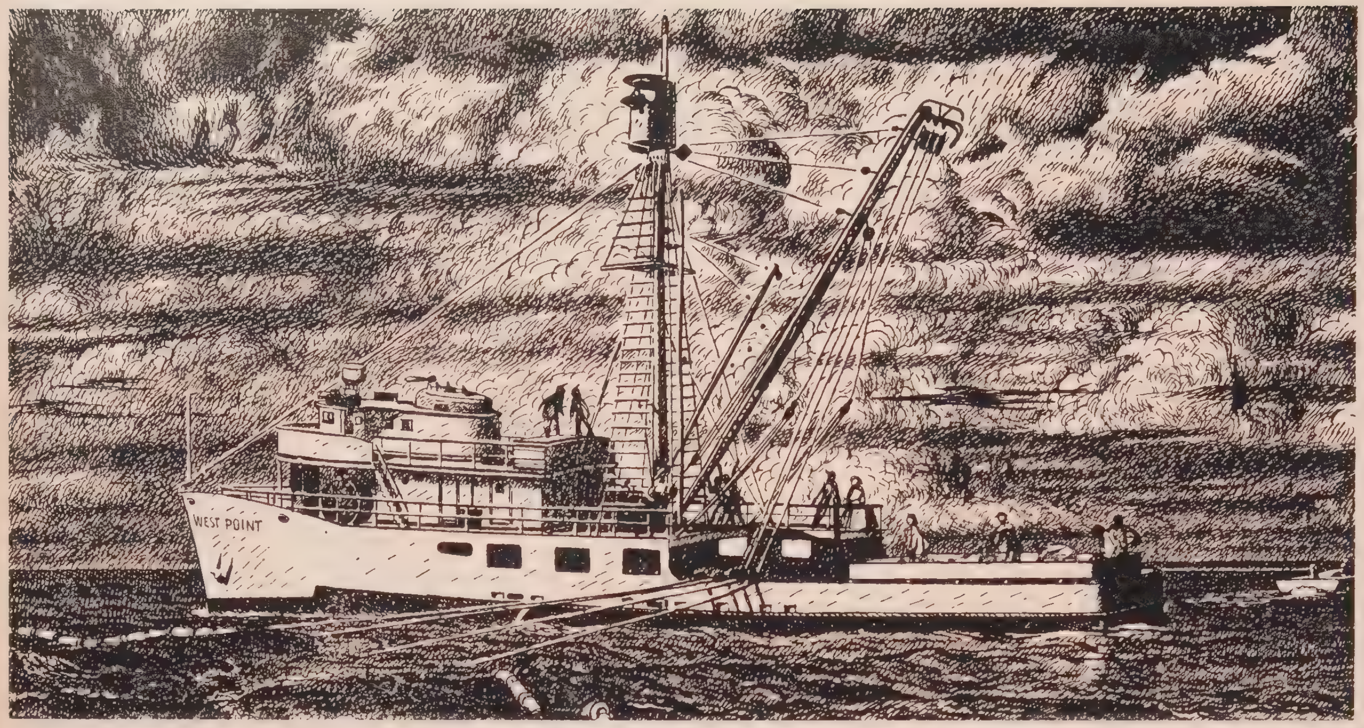

High-line steel Tuna Seiner, 112′ x 27′, owners Sverre and Chris Jangaard and Carl Hanken. Built by Tacoma Boatbuilding Co., Tacoma.

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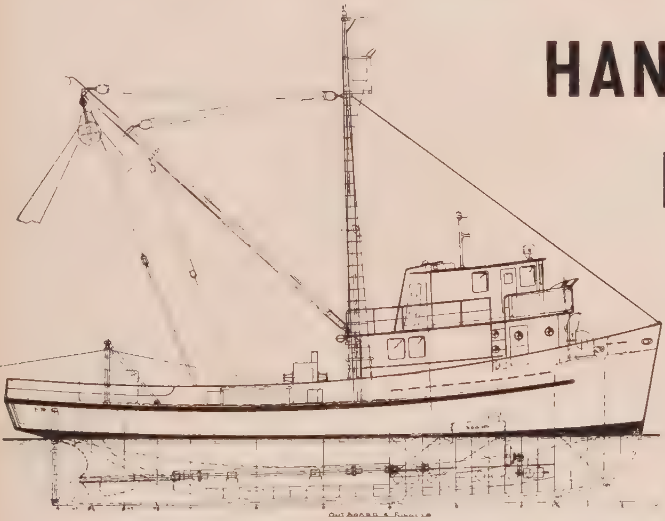

80′ x 22′ x 11′ steel combination vessel. H. C. Hanson design prototype for Chilean fleet now building.

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Tallying the Trends In the World's Fisheries

1961 1962

• *World fishing* sailed at a smart pace through 1961, running new courses, testing new models, employing new equipment, penetrating new markets, opening new oceans, reaching for new horizons.

Advances of 1961 already are part of the record, and for the thoughtful they are telltales, showing the way winds blow, where the currents run, and the directions the industry's future will follow.

These trends are myriad, and here below we examine but a few, choosing those which seem of special note for their significance tomorrow as much as for their importance in 1961.

Tuna Seining Revolution

• In 1961 the shift in tuna fishing continued until it brought a complete change in the methods of producing raw material for the United States' most important fishery, and continued its economic progress during 1961. Despite the increased production, landed tuna prices rose to the best levels in years, reflecting the good quality of the fares delivered and the canners' satisfaction with the assurance of adequate fish supply of domestic origin.

Tuna Clipper Conversion in 1961 progressed to its virtual boundaries, when all clippers of size and condition which could be converted into profitable seiners had been changed over to the new trade. This turned attention of tunamen to sources of vessels which could be quickly and economically prepared for the tuna trade. Some of the resulting vessels, such as the *Clipperton* and *Nautilus,* introduced new methods and departures in purse seining which may be the forerunners of developments broadly affecting the future's fishing.

Tuna Seiner Building was begun in 1961 when *Royal Pacific* was built for Capt. Lou Brito by Martinac of Tacoma—the first modern tuna seiner actually to be *built* as such. Before the year was out another, this one of steel, was under construction, also at Tacoma. These are the forerunners of the new fleet which the future will build.

Expansion into New Areas

• This was a feature of 1961 activities which is certain to carry over in 1962, and perhaps beyond. This reaching-out was primarily on the part of the two most aggressive of the world's great fishing nations—Japan and the USSR.

Gigantic Soviet Trawlers were fishing ocean perch on Georges Bank as 1961 closed. Thus they were working close to the coast of New England, in Boston's very offing; and they were fishing vessels of size and capabilities unmatched in the American trawler fleet.

Gulf of Alaska Trawling by mothership fleets of Japan, and perhaps of Soviet Russia, was virtually assured for early 1962 when Japan dispatched two such fleet units to Bering Sea in December, 1961, to initiate its first winter trawling in what its industry has come to call the "North Ocean."

U.S.S.R. will Follow Japan into the waters south and east of the Aleutian Islands and the Alaska Peninsula, in the view of informed observers; and may even have preceded them, for there were Soviet trawlers working in international waters of the Gulf of Alaska Thanksgiving Day, 1961.

Eastern Pacific Longlining was initiated by Japan in 1961 as its fishing vessels pushed further eastward than they are believed ever to have fished before, following the Equatorial tuna belt discovered by POFI out of Honolulu years ago. Just how far east they went, or how closely they approached the coasts of the Americas, is not known.

South Africa Entered Tuna Fishing actively in 1961 with a well conceived and equipped test fishery that found little difficulty in making catches which were counted satisfactory in volume and were well received by the varied markets to which they were sent. As result of the initial season's operation, an annual catch target in the range of 12,500-to-15,000 tons was considered altogether realistic.

New Zealand Looks to Tuna Canning in the immediate future with a view to utilizing the substantial resources which the Japanese longliners have proved in the seas between New Zealand and Australia. Initial development may involve dependence upon Japan for the primary fish supply, but the longer range plan is for development of a domestic fishing fleet and fishery.

Halibut "Spectacular" of 1961 was that staged by a group of Japanese expeditions operating on newly-discovered high seas grounds in western Bering Sea in the general vicinity of Sape Ulitorski and Cape Navarin on the northeast coast of Siberia. Japan's Bering Sea halibut catch, largely taken from this area, reached 11,000 metric tons in 1961. It is expected to be further increased in 1962. The fish are true halibut, rather small in size, but excellent in quality.

Japan Enters Sablefish "Club," in which the United States and Canada formerly were the sole members as the only producers of this species. Rapid expansion of Japanese trawling and longline fishing on Bering Sea banks produced 23,231 metric tons of sablefish in 1961. While most of this initial catch was used domestically, some was test marketed in the United States, including particularly the Hawaiian Islands. Quality was reported good and it was well received.

Japan's Atlantic Trawling is expected to take her vessels from the northwest coast of Africa to the Grand Banks and other historic fisheries of the Northwest Atlantic seasonally, thus permitting them to maintain most productive activity in the Atlantic throughout the year. Japan's trawling off northwest Africa has been wholly successful in producing fish highly esteemed for the home market, notably *tai,* the red sea bream which the Japanese esteem above all other fish.

The Supply of Salmon

- In 1961 the world's output of canned salmon generally was good, with *Japan* producing the best canned pack since World War II, although the tonnage of its total catch, approximately 145,000 tons, was almost 1,200 tons under 1960. *USSR* catch is reported as approximating 80,000 tons, up about 12% from 1960; amount of canned pack unknown. *Canada* had a good pack, particularly in contrast with the very poor one the year before. *Alaska* did better than in a number of years, in spite of some weak spots. *Puget Sound* and *Columbia River* salmon production in 1961 was very disappointing, the Sound due essentially to the poor runs of both Sockeye and Pinks to the Fraser River.

Salmon Prospects for 1962 are not good. *Bristol Bay,* after two big years, inevitably will be greatly reduced in yield, and commercial operations there may have to be very closely restricted. Much the same is true of the *Fraser River,* where an extremely small run is forecast in spite of the fact that 1962 is the cycle year of the great Bonanza run of 1958.

South American Growth

- This continues as one of the striking features of the world's fisheries. Peru, with a 1961 catch approximating 4 million tons, firmly established its position among the top five nations of the world in tonnage of fish produced. More boats, and more modern boats, continue to be built actively in Peru and scientists report no signs that Peru's anchoveta fishery is approaching its optimum.

Fish Meal Markets, shocked and shaken all over the world by Peru's explosive and low cost production, have recovered moderately as consumption has been stimulated and marketing rationalized in keeping with good business practice.

Product Diversification is a trend of utmost significance in some countries, notably among the great fishing companies of Japan. There the large producers have diversified widely into poultry production and fur farming, thus utilizing their own fish meal and plant waste materials for feeding animals for greater economic recovery than is possible by selling these feed concentrates in world competition.

Factory Ships Keep Busy as one means of reducing costs and effecting full yield from the investment. For example, Hokuyo Suisan, which pioneered Japan's Bering Sea bottomfishing and reduction business, in the winter of 1961-62 dispatched one of its factoryships to a high seas station 12 miles off Angola, on the southwest coast of Africa. She was expected to be back on Bering Sea as soon as winter returns to the southern hemisphere. In African waters she will receive reduction fish from 40 Angolan vessels; as well as bottom fish for freezing from 14 trawlers.

Next "Explosion" in Chile is the forecast of competent observers who have studied the fisheries of that South American country. One such reports that Chile in 1962 stands at about the point in its fishery development that Peru did in 1952, with amazing possibilities for growth stretching out into the future.

A "Natural" for Fisheries, that's Chile, which shares on the north with Peru the astonishing resources of anchovies and bonito; and further south has its own distinctive abundance of merluccius, langostinos and scores of species abundant to the continent's extremity in the bitter subantarctic seas. Chile will follow its neighbor, Peru, into the circle of the world's great fishing nations, in the view of thoughtful students of fisheries and their economics.

South African Interests ranking high in the fisheries there expect to enter the fisheries of Chile in 1962, building a fish meal plant at Iquique, supplying it with a fleet of purse seiners of the style generally used in South Africa and South-West Africa. The vessels will be built in Chile by the boatbuilding subsidiary of a Seattle, Wash., firm.

International Industry

- Fishery corporations of different nations, working together in joint operation, provide a pattern of significant development which was plainly evident for the first time in 1961., but which points into the future as something to watch. Here are some of the notable examples:

Canadian Whaling has been handicapped by the low level of the world markets for whale meal and oil. Productive whaling operations have been tied-in with use of as much as possible of the whale meat for food—for human beings, or for canning as pet food. To provide such an outlet, and to provide whale meat for the ever-growing market in Japan, British Columbia Packers, Ltd., and Taiyo Gyogyo K.K. entered into a joint ven-

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UNION FISHERMEN'S CO-OPERATIVE
PACKING COMPANY
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ture for the 1962 operation of the former's idle Vancouver Island whaling station.

Chilean Anchovies, packed sardine style for the extensive trade in Southeast Asia and Malaya, are expected to be primary product of a three-company, three-country joint venture which will be based on Iquique, Chile. Participating in this enterprise are: J. H. Todd & Sons of Vancouver, British Columbia; Marine Construction & Design Co. of Seattle, Washington; and Alimentos Marinas of Santiago, Chile. The Todd company, long engaged in fish canning in Canada, is experienced in the canning of herring sardine style; Marco, already interested in Chile, is building steel fishing vessels in that country through a subsidiary; and the Chilean partner, as its name implies, is engaged in the seafood business.

Atlantic Coast Tuna Canning will be entered early in 1962 by a joint venture, Maryland Tuna Corporation, a subsidiary and division of Castle & Cooke, Honolulu. The corporation, with a tuna cannery and cold storage at Cambridge, Maryland, will be operated by Bumble Bee Seafoods, Inc., another division of Castle & Cooke. Taiyo Gyogyo K.K., the world's largest fishing company, holds part ownership in Maryland Tuna Corporation; and is expected to supply a substantial portion of the raw material for the cannery from the catches of its longliners fishing tuna in the Atlantic between Africa and Brazil.

West African Operations are the focal points of a number of international joint ventures, both between African governments and foreign companies and between corporations operating in the newly independent nations fronting the Atlantic and the Gulf of Guinea. Such corporations include Nippon Suisan K.K., Van Camp Sea Food Co., Taiyo Gyogyo K.K., Star-Kist Foods, Inc.; and the governments of Ghana, Nigeria, and Sierra Leone.

Fishing Gear Technology

- With new methods, equipment and materials, fishing races ahead in practical, profitable directions, catching more fish at less cost. These developments of substance follow the improvement of existing methods with new devices and materials. Such exotic ideas as electrical field fishing are not included here. We have spoken of the American development of tuna seining. Here are some others, including the gear development which made modern seining methods possible:

Power blocks played a fundamental part in successful seining for tuna, and now some of the new ventures in tuna seining are employing two blocks, to load the seine from both ends, or to transfer it aboard the vessel.

Tuna Seines must sink deep and swiftly, so chains are substituted for lead lines, and the nets are actually being deepened to 50 fathoms, while lengths run to 450 fathoms at least. Corklines, cork purse lines, and "zipper" lines are being made of braided nylon. The main purse lines of course are of steel.

Mono-filament Nylon Gillnets rocketed into many-times-multiplied success in 1961 when the Japanese high seas salmon fishermen proved the great advantage of mono-filaments with oval cross-section and dyed a pale gray. These two developments apparently reduced visibility of the nets and greatly increased their effectiveness over that of European nets made of filaments with circular cross section.

Astonishing Effectiveness of mono-filament nylon salmon gillnets in 1961 proved threatening to fisheries already fully exploited and in that year Canada joined the United States in prohibiting the use of this gear in fishing for salmon, and until its effect upon conservation and administration of the resource can be fully evaluated.

Polyester Synthetics are Next fibers to bring benefits to the fisheries, in the view of competent specialists. Known in Japan as "Tetoron," in the United States as "Dacron," and in Great Britain as "Terylene," polyesters are beginning to make gains in gillnetting, where nylon for years has been supreme. Advantages claimed are: equal wet-strength; greater weight; less elongation under strain; improved knot-holding.

Polypropylene for Rope is one of the recent advantages fishermen have drawn from chemistry. While not as light as polyethylene, which floats in water, this newer fiber has much greater strength, and at the same time is lowest in cost of any of the synthetic fibers favored for fishing gear.

Mid-Water Trawls Became Commonplace in 1961, when the mystery which had surrounded much of the development of this gear fell away as it went into rather widespread application, particularly in Bering Sea, where the Japanese used this method effectively in fishing herring and shrimp, finding the shellfish all the way from near the bottom to the surface. Japan's 1961 catch of herring in Bering Sea was 73,000 metric tons, most of it taken with this form of gear.

Strides in Fishery Science

- Biology in its strictly practical aspects made some notable contributions to management of resources and of business, and to the profits and human benefits drawn from both, in 1961 and may be expected to influence trends in the future, as well as to increase in the value of their application, and through extension into other fields.

Yellowfin Tuna Quota for the catch by nations signatory to the Inter-American Tropical Tuna Convention was recommended by this commission as its findings showed the catch of Yellowfin in the eastern Pacific had reached the optimum which could be sustained from year to year. The quota would be set at 83,000 tons for 1962. Maximum permissible sustained-yield catch is estimated by the commission's scientific staff as 97,000 tons.

Shrimp Culture Method Discovered by Dr. Motosaku Fujinaga, Japanese scientist, in 1961 produced shrimp in commercial quantities in abandoned salt pans along the Inland Sea. Shipments were made daily to Tokyo restaurants; and it was anticipated that production would be largely expanded in the future. The enterprise is supported by a corporation in which the largest fisheries companies of Japan are joint participants.

Forecasting of Salmon Runs, long an objective of biologists and industry alike, in recent years has demonstrated success which climaxed strikingly in 1960 and 1961, giving promise that in the future, and *in certain specific areas* at least, fishermen and operators can know in ad-

"Our MOMOI net is 100% SATISFACTORY"

say the top men on the

RANGER

Skipper Joe DaSilva Jr. and Mast Man Marion Rafkin of the newly-converted San Diego purse seiner *Ranger*, have this to say about their MOMOI net:

"It worked perfectly, did a fine job for us. We caught 285 tons on our first trip. We expected top performance, and got it from our MOMOI Hi-Tenacity Nylon net."

Design and construction work on the conversion of the 128-ft. *Ranger* was done by Harbor Boat & Yacht Co., San Diego. She ships a 445-fathom net, worked by a 251-S Northern winch, latest-type design.

MOMOI tuna net is made with Nylon filament produced by TOYO RAYON Co., Osaka, Japan

MOMOI FISH NET MFG. CO. Ako, Hyogo, Japan

MOMOI CO., INC. 1506 Judson St., Long Beach 13, California vance with reasonable assurance the amount of salmon they can expect in the coming season. Economic advantage of such scientific forecasts is enormous.

Electronics in Fishing

- Employment of electronic phenomena in fishing in 1961 looked both out and down as asdic was employed by tuna vessels to detect schools below the surface from a distance and as trawlers used highly specialized sounders to show just where their mid-water gear is fishing, and where it *should* fish.

Horizontal Sonar Methods developed in Norway were employed experimentally in tuna seining in 1961 when Simrad instruments of this type were installed aboard the seiner *West Point*, pointing the way for further developments which may further increase the effectiveness of the already phenomenally successful tuna nets.

Super-Sensitive Sounders developed by the Japanese readily distinguish the deep scattering layer (DSL) in the sea, even revealing varying densities of the layer resulting from the concentrations of the organisms composing it. Herring are found to feed above the DSL, and cod below. Working with a combination of sounders on the net and on the fishing vessel, the trawl skipper is able to position his mid-water trawl vertically and horizontally to take schools of fish detected by the extra-sensitive sounder on the trawler far out ahead of the net.

New Fisheries Products

- Food technology advances swiftly, and fish and seafoods are attractive fields for the chemical and physical scientist. Experimentation applies irradiation of fish as a possible future means of preservation. Antibiotics are already sanctioned under exacting controls. There are other and promising innovations in practical application or in immediate future promise.

Freeze Drying of Seafoods is already in commercial application in the United States and consistently gives plainer promise of developing into a major method of food preservation, and one particularly applicable to shellfish. Principal commercial employment thus far has been with shrimp, where it has proven remarkably effective in producing an article which keeps without canning or refrigeration and reconstitutes quickly and without sacrifice of texture, flavor or food value.

Fish Sausage Skyrockets into a major position in Japanese seafood packing for the domestic market with a large and steadily growing tonnage. It has the advantage of providing a concentrated, relatively low-cost high-protein convenience food, and at the same time utilizes materials not otherwise considered particularly desirable.

Japan Imports Sausage Ingredients to some degree in order to meet the astonishing demand. For example, the spearfishes, notably marlin, are used in the sausage. While the domestic catch is large, it is being supplemented at low cost by imports from South Africa. Whale meat is another ingredient, and Japan this year will be importing part of its requirements from British Columbia. Pork fat is another essential in the recipe, and most of it is imported.

Tuna is Tops for Sausage, and indeed is the prime ingredient. Big-Eye tuna of the larger sizes is favored for this purpose because it often is too dark in color to be particularly desirable for canning. Large quantities of Big-Eye tuna taken by longlining are split, head and tail removed, and brought home frozen as the principal component of fish sausage, "ham," and bologna.

Pioneering in Shrimp

- With the world demand for shrimp apparently insatiable, fishing for these creatures reaches out into some of the hottest, and into some of the coldest ocean waters in the world. The Persian Gulf and the coasts of India continue to develop shrimp products of high quality and increasing volume. Bering Sea in 1961 yielded to Taiyo Gyogyo K.K. a profitable pack of canned shrimp in the initial year of exploitation. Japanese expansion in this enterprise in 1962 is virtually certain.

Guatemalan Shrimp Resources are being developed by a new company owned by Guatemalan interests and Nichiro Gyogyo K.K. and Mitsubishi Shoji K.K., two of Japan's great companies. The plant is located at Champerico, Guatemala, and is being served by 20 fishing vessels. Six, each of 30 tons gross, were built new in Mexico for the enterprise. The others are local Guatemalan craft. The operation is being served by a modern freezing and cold storage plant.

U.S. Atlantic Tuna Canning

- Movement of Pacific tuna canners to establish branch operations on the Atlantic took two new, long strides in 1961 with the announcement of two additional operations there by Pacific operators. This trend, which has been particularly marked in Puerto Rico, arises from two fundamental stimuli: (1) Demonstration of the immense tuna resources of the tropical Atlantic; (2) Economic attraction of canning close to the primary tuna markets in the great population centers of the United States.

World's Largest Canner, California Packing Corporation, in 1961 initiated construction of a tuna cannery at Mayaguez, Puerto Rico. Calpak at one time was an active tuna packer, but for a number of years has had no plant of its own active in this field. By the end of 1962 it is expected to be in full operation in Puerto Rico, where it joins Van Camp and Star-Kist, the two giants of world tuna canning.

Third Largest U.S. Tuna Canner also entered the Atlantic Coast field in 1961 when Bumble Bee Seafoods, Inc., announced it would have a modern three-line cannery in operation at Cambridge, Maryland, in April, 1962; and that it expects to pack approximately 6,000 tons of tuna there during the current year.

- *These are Some of the Trends* manifest in the recent past, and pointing into the future, where their projections may shape the fisheries, as well as their markets, their methods, their products and their profits. The international aspects of these trends confirm once more *Pacific Fishermen's* conviction voiced in the slogan: *Fishing is a World Industry.*

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NORTH PACIFIC SALMON—1961

Overall, a GOOD Season

● Salmon yield of the North Pacific fisheries was good in 1961. Viewed as a whole, and with local variations smoothed to averages, the catch was favorable all the way around the great North Pacific arc of coast where salmon occur from California to Canada, Alaska, the mid-ocean, Kamchatka and Japan.

Japan had the best Red salmon pack since before the war. Pink salmon was understandably down, it being the off-year.

Soviet Russia's canned salmon pack is not reported, but tonnage figures approximating 80,000 metric tons indicate an increase of about 12% over 1960.

Alaska's canned salmon pack topped 3 million cases for the first time since 1954; its Red salmon pack was the largest in any year since 1948; and Pinks produced the largest pack in any year since 1949, with the single exception of 1958.

Canada canned more than twice as much salmon in 1961 as in the very poor year preceding; and this in spite of the exceedingly poor field from the Fraser River fishery.

Puget Sound had a moderate pack of Sockeyes and Pinks were decidedly disappointing. Silvers, however, came back strongly with the best run in years.

● North American canned salmon production of 1961 ran barely above 5 million cases, and reached a wholesale market value of $166,017,495.

Chums were the species in shortest relative supply; and indeed were the only species in which there could be said to be scarcity.

Reds, with an overall production in the United States and Canada of 1,842,811 cases were in comfortable condition.

Pinks, supported by good production in Prince William Sound, Southeast Alaska and northern British Columbia, topped 2,000,000 cases and came nearer to meeting requirements for this species than had been the case for years.

Chums were weak — everywhere — as the unexplained downward reaction of this species continued over another year.

Silvers, with 381,341 cases packed, were in excellent supply. The production of this grade was particularly good in British Columbia and on Puget Sound, reflecting the remarkable run of the species along these coasts in 1961. When cognizance is taken of the large packs of frozen and mild cured Silvers also put up in 1961, the canned production seems truly remarkable.

Chinooks and Steelheads, with only 126,432 cases packed, were a long way short of their Golden Age when the Columbia River alone often packed three times this amount.

● Prices held high in spite of the fairly flush pack, and according the overall wholesale values were excellent.

To Alaska the 1961 pack was worth $104,117,000. Washington's canned salmon, although disappointing in quantity, still was worth $11,891,000. Oregon was in third place among the states, with canned salmon counted at $4,230,000.

British Columbia's 1961 pack, priced on the export basis, is figured at $45,778,000.

Actual volume of the Asian production is not yet available, but we know Japan had the best pack since before the Pacific War. That of the U.S.S.R. must have been good also, as evidence from figures released just at the end of 1961 and shown in an accompanying table.

● The look-ahead is not reassuring, particularly so far as Red salmon is concerned. The industry entered 1962 with markets firmed by the prospect of reduced returns from the runs due this year in certain key areas—notably Bristol Bay and the Fraser River-Puget Sound fishery.

1961 - Pacific Canned Salmon Packs and Values

DISTRICT	RED, SOCKEYE or BLUEBACK		PINK		CHUM		SILVER or COHO		KING or CHINOOK & STEELHEAD		TOTAL	
	Cases	Value	Cases	Value	Cases	Value	Cases	Value	Cases	Value	Cases	Value
Alaska	1,305,142	$46,985,112	1,332,099	$38,630,871	528,457	$14,004,110	82,212	$2,630,784	51,841	$1,866,276	3,299,751	$104,117,153
Washington	136,519	6,825,950	66,216	1,920,264	50,491	1,312,766	36,658	1,283,130	10,559	549,068	300,443	11,891,178
Oregon	2,847	170,820	76	1,976.	1,713	41,112	21,737	1,086,850	55,565	2,929,680	81,938	4,230,438
Total U.S.A.	1,444,508	53,981,882	1,398,391	40,553,111	580,661	15,357,988	140,607	5,000,764	117,965	5,345,024	3,682,132	120,238,769
British Columbia	398,303	17,724,483	661,103	16,858,126	95,387	2,098,514	240,734	8,792,791	8,467	304,812	1,403,994	45,778,726
GRAND TOTAL	1,842,811	71,706,365	2,059,494	57,411,237	676,048	17,456,502	381,341	13,793,555	126,432	5,649,836	5,086,126	166,017,495

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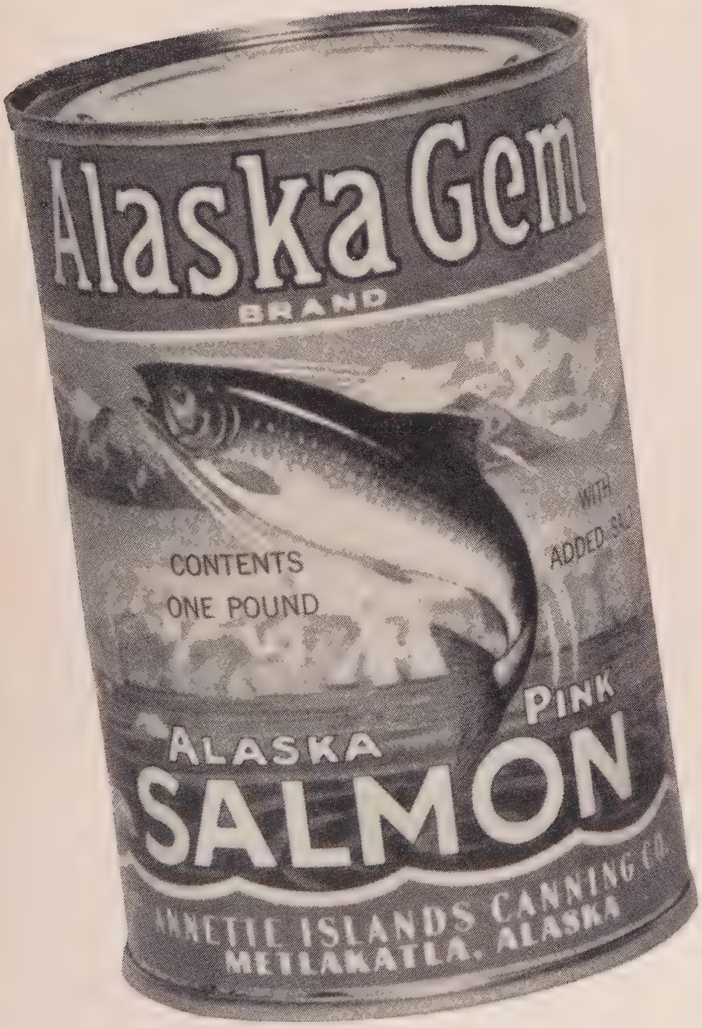

There's good reason for the popularity of Alaska Gem and other salmon canned by Annette. Our cannery, ideally located adjacent to fishing grounds, is always assured a supply of fine, prime ocean-caught fish . . . salmon that are naturally best . . . fresh-caught and canned while at their best. Particular pride is taken, too, in handling and processing, in the cleanliness and sanitation of our modern cannery. All to safeguard the quality that is our reputation.

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ALASKA SALMON

New High in Value

- With 3,299,751 cases of salmon in 1961, Alaska had a good year—and a surprising one. It was the richest-ever in dollar value.

The year was good in unexpected spots—Icy Strait and Prince William Sound—and not as good as expected where great things had been anticipated—on Bristol Bay.

Alaska *volume* was the best since 1951—and the $104,117,153 value of the pack was the highest ever, because of high prices, that's true.

Reds, which checked in at 1,305,000 full cases, were the best in a long time, but were topped volume-wise by Pinks, which ran to 1,332,000 cases.

Chums were a weak 528,000; and Silvers were only 82,000 in spite of the excellent run of this species further south.

Kings reached only 51,000 cases in spite of the added emphasis given them by the liberalized regulations on the Yukon and Kuskokwim. Actually, this made it possible for some enterprisers to fly prime Kings from the Kuskokwim to Cook Inlet for canning. At that, the pack was the best for the species since 1954.

Only once before in history had the value of Alaska canned salmon in a single year topped $100 million. This was in 1948, when the pack was worth $100,694,000, against $104,117,000 in 1961.

- Alaska's pack of salmon for 1961, running above 3 million cases for the first time since 1954, was a *good* one, surprisingly good in same areas; good, but still disappointing on Bristol Bay; and discouraging in a few districts.

The big surprises of the year were three:

1. That Bristol Bay, for all its pack of above 1 million cases, was not better, coming up to the forecasts of greater abundance;
2. That Prince William Sound should produce a substantial pack of Pinks in a year when none were expected;
3. That the northern waters of Southeast Alaska should yield an excellent and well sustained run of Pinks.

WESTERN ALASKA CANNED SALMON PACKS

BRISTOL BAY AND YUKON (Cases)						YEAR	ALASKA PENINSULA, NORTH SIDE (Cases)						GRAND TOTAL
Reds	Pinks	Chums	Cohoes	Kings	TOTAL		Reds	Pinks	Chums	Cohoes	Kings	TOTAL	
1,588,008	....	24,559	1,456	9,197	1,623,220	1933	26,665	...	1,490	...	284	28,439	1,651,659
1,726,769	1,959	32,222	1,219	8,580	1,770,759	1934	87,379	...	974	...	217	88,570	1,859,329
231,014	....	6,995	223	660	238,892	1935	34,920	4	2,862	...	175	37,961	276,853
1,388,776	30,773	25,045	1,571	4,092	1,450,257	1936	38,930	293	1,511	...	214	40,948	1,491,205
1,421,369	....	29,286	138	6,897	1,457,690	1937	55,315	1	6,170	...	234	61,720	1,519,410
1,772,885	....	54,551	345	5,446	1,833,227	1938	73,942	...	5,063	...	1,053	80,058	1,913,285
1,059,181	....	88,272	....	5,038	1,152,491	1939	56,310	2	6,478	...	465	63,255	1,215,746
402,899	16,081	30,624	1,445	3,504	454,553	1940	56,158	...	4,914	...	79	61,151	515,704
577,024	9	50,901	3,436	5,785	637,155	1941	36,366	95	4,953	...	179	41,593	678,748
438,053	8,564	16,749	2,638	7,001	473,005	1942	....	...	....	...	...	....	473,005
954,694	....	37,757	180	11,826	1,324,975	1943	39,330	54	3,680	...	56	43,120	1,368,095
954,694	3,911	31,838	2,408	5,420	998,271	1944	31,849	130	12,855	...	21	44,855	1,043,126
576,318	....	66,888	3,105	9,478	655,789	1945	32,342	127	25,007	...	22	57,498	723,287
628,240	4,073	36,436	2,663	10,768	682,180	1946	27,821	...	1,798	...	167	29,786	711,966
1,335,031	....	35,802	1,866	13,737	1,386,436	1947	25,675	...	6,047	8	71	31,801	1,418,237
1,212,233	3,148	64,167	4,140	13,576	1,297,264	1948	65,961	101	17,474	1,220	310	85,066	1,382,330
525,309	....	33,345	2,214	13,795	574,663	1949	10,612	...	2,954	2,349	179	16,094	590,757
577,158	1,607	16,588	2,840	13,217	611,410	1950	10,335	2	18,294	4,098	158	32,887	654,162
309,936	....	15,744	4,366	15,086	345,132	1951	29,656	75	9,777	3,637	242	43,387	388,519
715,083	1,339	31,457	1,661	19,236	768,776	1952	14,477	...	7,379	6,031	123	28,010	796,786
443,137	1	36,921	78	20,319	500,456	1953	17,391	1,175	9,157	3,301	396	31,420	531,876
307,469	4,441	31,694	1,630	8,453	353,687	1954	12,352	5,103	7,308	3,387	510	28,660	382,347
313,962	....	20,413	998	13,187	348,560	1955	20,508	91	2,266	550	474	23,889	372,449
531,100	3,918	24,178	4,130	9,357	572,683	1956	48,661	...	6,530	258	547	55,996	628,679
464,306	....	23,982	4,053	28,695	521,036	1957	20,192	2	7,160	1,025	455	28,834	549,870
242,440	62.229	35,088	10,583	24,836	375,176	1958	36,694	7	9,618	2.443	1,412	50.174	440.199
332,385	6	42,320	2,570	30,966	408,247	1959	43,368	47	7,241	312	1,773	52,741	460,988
852,645	11,897	102,834	2,370	32,364	1,002,110	1960	37,010	707	4,022	110	733	42,582	1,044,692
934,544	101	59,918	1,878	36,946	1,033,387	1961	27,863	...	3,778	144	506	32,291	1,065,678
451,246	8,383	36,463	3,244	20,250	519,586	Aver.	28,031	720	7,046	2,105	667	38,569	559,641

NOTE: Figures are based on Alaska Department of Fish and Game and U.S. Bureau of Commercial Fisheries final data, which DO NOT include fish caught in these areas and canned elsewhere, and accordingly are somewhat different from those in other tables compiled independently by PACIFIC FISHERMAN. Figures for the latest year shown are preliminary. "Average" figures are for ten years preceding the current year. Bristol Bay totals and Grand totals include fish packed in Yukon-Kuskokwim district.

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Weekly Red Salmon Packs on Bristol Bay

YEAR	FIRST WEEK		SECOND WEEK		THIRD WEEK		FOURTH WEEK		TO CLOSE	TOTAL	YEAR
1940	(July 6)	221,687	(July 13)	139,853	(July 20)	33,848	(July 28)	4,606	. .	399,994	1940
1941	(July 5)	204,929	(July 12)	206,049	(July 19)	127,573	(July 28)	31,316	. . .	569,867	1941
1942	(July 4)	149,175	(July 11)	142,145	(July 18)	93,174	(July 25)	44,323	7,357	436,174	1942
1943	(July 3)	284,635	(July 10)	449,076	(July 17)	272,074	(July 24)	242,122	27,174	1,275,081	1943
1944	(July 8)	431,421	(July 15)	347,149	(July 22)	116,514	(July 29)	18,045	. . .	944,129	1944
1945	(July 7)	236,413	(July 14)	233,332	(July 21)	84,681	(July 28)	15,405	. . .	569,831	1945
1946	(July 6)	241,948	(July 13)	241,405	(July 20)	88,520	(July 27)	30,831	. . .	602,704	1946
1947	(July 5)	641,401	(July 12)	376,575	(July 19)	242,854	(July 26)	70,975	3,226	1,335,031	1947
1948	(July 3)	482,252	(July 10)	464,488	(July 17)	169,806	(July 24)	112,111	7,680	1,236,226	1948
1949	(July 2)	260,145	(July 9)	142,637	(July 16)	86,865	(July 23)	30,675	3,581	523,903	1949
1950	(July 1)	93,006	(July 8)	370,340	(July 15)	89,070	(July 22)	10,832	411	563,659	1950
1951	(June 30)	59,185	(July 7)	127,553	(July 14)	73,692	(July 21)	59,143	. . .	319,573	1951
1952	(June 28)	92,073	(July 5)	228,069	(July 12)	256,014	(July 19)	119,729	21,618	712,503	1952
1953	(June 27)	63,478	(July 4)	191,378	(July 11)	127,590	(July 18)	51,229	9,382	443,057	1953
1954	(July 3)	116,428	(July 10)	97,034	(July 17)	75,381	(July 24)	17,230	1,396	307,469	1954
1955	(July 2)	73,936	(July 9)	142,358	(July 16)	86,500	(July 23)	8,469	2,369	313,632	1955
1956	(June 30)	32,826	(July 7)	121,942	(July 14)	266,146	(July 21)	103,065	7,121	531,100	1956
1957	(June 29)	57,403	(July 6)	134,668	(July 13)	223,727	(July 20)	40,512	7,996	464,306	1957
1958	(June 29)	47,190	(July 6)	168,587	(July 20)	38,942	(July 20)	46,076	15,668	316,463	1958
1959	(June 28)	10,960	(July 5)	89,309	(July 12)	120,755	(July 19)	87,096	23,843	331,963	1959
1960	(June 26)	19,472	(July 3)	183,274	(July 10)	357,085	(July 17)	247,506	45,308	852,645	1960
1961	(June 25)	51,910*	(July 2)	251,472*	(July 9)	442,808	(July 16)	188,133	. . .	934,323	1961

*Includes minor quantities from North Peninsula area.

Compiled from U. S. Fish & Wildlife Service preliminary statistics, and includes only salmon canned in that area.

Figures in first column of table are for the total pack (in full cases of 48 lbs. net) to dates shown: those following show weekly packs.

● What happened on Bristol Bay remains a puzzle. A forecast of 22 million fish in the total run was made at the end of 1960 by the scientists of the Alaska Department of Fish and Game, the Fisheries Research Institute, and the U.S. Bureau of Commercial Fisheries. Actually, this was close to the mark. Later, however, just before the season opened, the research fishing of the FRI on the high seas near the Abstention Line produced data which led the Institute to revise its forecast upward to 30 million for the total run.

The run to Bristol Bay was far short of expectations. Fishermen believe the shortage was due to the Japanese high seas fleet taking a much heavier-than-usual catch out of the Bristol Bay run in waters to westward of the Abstention Line. Scientific confirmation of this belief was not available at time of writing, perhaps in large measure due to lack of adequate data from the Japanese fleet as to the time, place and volume of its catch of Red salmon.

In one respect, the forecast for Bristol Bay was exactly correct. This was in size of fish. The average number required to pack a case in 1961 was approximately 11.8, in contrast

1961-WESTERN ALASKA CANNED SALMON PACK

COMPANY	CANNERY LOCATION	RED			PINK	CHUM	COHO	KING or CHINOOK			GRAND TOTAL (full cases)
		1-lb. Talls (etc.)	1/2-lb. Flats (8 doz.)	Total (full cases)	1-lb. Talls (etc.)	1-lb. Talls (etc.)	1-lb. Talls (etc.)	1-lb. Talls	1/2-lb. Flats (8 doz.)	Total (full cases)	
Alaska Packers Ass'n.	Naknek, Nushagak, Egegik, Ugashik	208,120	20,614	228,734	---	10,186	77	1,483	---	1,483	240,480
Aleutian Development Co., Inc.	Unalaska	---	---	---	676	18	---	---	---	---	694
American Pkg. Co.	Naknek	32,715	26,484	59,199	106	1,645	---	347	98	445	61,395
Artic Maid Fisheries	Naknek, Egegik	15,332	---	15,332	---	306	---	2	---	2	15,640
Bumble Bee Seafoods, Inc.	Naknek	52,206	6,425	58,631	---	3,994	---	316	28	344	62,969
"	Ekuk	7,333	2,503	9,836	---	1,372	70	5	826	831	12,109
Bering Sea Fisheries, Inc.	Naknek	4,703	---	4,703	---	117	---	---	---	---	4,820
Bogler, Henry	Yukon River	---	---	---	---	---	---	1,410	488	1,898	1,898
Columbia Wards Fisheries	Naknek, Egegik, Ekuk	132,733	19,235	151,968	---	8,405	281	153	3,347	3,500	164,154
Egegik Packing Co.	Egegik	38,858	894	39,752	---	719	---	104	---	104	40,575
P.E. Harris Co. Inc.	Bristol Bay	18,750	649	19,399	---	337	---	49	---	49	19,785
Kayok Packing Co.	Naknek	3,495	---	3,495	---	36	---	---	---	---	3,531
Marine Fishing & Packing Co.	Bristol Bay	7,412	---	7,412	---	140	---	12	---	12	7,564
Mormac Corporation	Naknek	2,480	---	2,480	---	159	61	157	---	157	2,857
Nakat Packing Corp.	Nakeen	54,067	6,136	60,203	---	4,095	---	327	28	355	64,653
Naknek Independent Pkg. Co.	So. Naknek	6,210	---	6,210	---	268	28	25	---	25	6,531
New England Fish Co.	Bristol Bay	58,381	---	58,381	---	4,727	52	1,944	---	1,944	65,104
Northern Commercial Co.	Kwiguk	---	---	---	---	---	---	---	3,950	3,950	3,950
Northern Reefer Co.	Naknek	19,932	---	19,932	---	306	---	34	---	34	20,272
Pacific American Fisheries	Naknek, Dillingham, Port Moller	71,328	9,935	81,263	---	7,079	2,143	2,423	3	2,426	92,911
Pacific Reefer Fisheries	Pederson Point	11,000	---	11,000	---	172	---	25	---	25	11,197
Queen Fisheries, Inc.	Nushagak	26,705	20,851	47,556	---	4,933	1,334	2,792	80	2,872	56,695
Red Salmon Company	Naknek	59,263	8,928	68,191	---	5,366	70	321	854	1,175	74,802
Togiak Fisheries Inc.	Togiak	---	10,545	10,545	---	8,421	---	---	2,006	2,006	20,972
Yukon Packers	Saint Marys	---	---	---	---	---	---	---	4,450	4,450	4,450
Yukon River Fishermen Co-op Ass'n., Inc.	Alakanuk	---	---	---	---	---	---	---	9,408	9,408	9,408
TOTALS		831,023	133,199	964,222	782	62,801	4,116	11,929	25,566	37,495	1,069,416

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with more than 15 fish the previous year.

With the industry fully prepared to pack an even larger catch than was taken, the fish were handled smoothly in spite of large volume. Moreover, the weather during the main run was cold; and this contributed to protecting the excellent quality of the big Reds.

The number of fish taken on Bristol Bay in 1961 approximated 12,200,000 with the Naknek-Kvichak fishery producing upwards of 8,500,000 and the Egegik approximately 2,400,000. The balance came from the Ugashik, Nushagak and Togiak fishery, the latter's catch containing a substantial number of Chums.

The catch of the Egegik district was surprising, although undoubtedly it included a considerable proportion of fish from the Naknek-Kvichak run, intercepted as they passed the Egegik. In order to encourage fishing inside the Egegik proper, the ADF opened the stream to fishing far above the normal deadlines.

The run of Pinks to the Nushagak, which produced a nice pack in 1959,

Pack of Alaska Canned Salmon by Species and Values

Salmon fishing in Alaska commenced in 1878, but no segregation of the packs by species is available prior to 1896, while the valuations were not recorded prior to 1905. Earlier total packs, starting with 8,159 cases in 1878, ranged from 6,539 cases in 1880 to a peak of 801,400 in 1891, the output in 1895 being 626,530 cases. The average from the beginning through 1895 was 291,973 cases.

Values are based on opening prices, or on prices at which the bulk of the packs were sold.

YEAR	RED, SOCKEYE		PINK		CHUM		COHO		KING		TOTAL		YEAR
	Cases	Value	Cases	Value	Cases	Value	Cases	Value	Cases	Value	Cases	Value	
1896	806,010	...	111,986	...	452	...	37,017	...	11,242	...	966,707	...	1896
1897	688,581	...	157,711	...	1,396	...	43,557	...	17,833	...	909,070	...	1897
1898	782,941	...	109,399	...	5,184	...	54,711	...	12,862	...	965,997	...	1898
1899	864,254	...	149,159	...	1,931	...	39,402	...	23,400	...	1,078,146	...	1899
1900	1,197,406	...	232,022	...	30,012	...	50,984	...	37,715	...	1,548,139	...	1900
1901	1,319,335	...	541,427	...	47,464	...	65,509	...	43,069	...	2,016,804	...	1901
1902	1,685,546	...	549,602	...	159,849	...	82,723	...	59,104	...	2,536,824	...	1902
1903	1,687,244	...	355,799	...	35,052	...	120,506	...	47,609	...	2,246,210	...	1903
1904	1,505,548	...	299,333	...	21,178	...	85,741	...	41,956	...	1,953,756	...	1904
1905	1,574,428	$5,335,547	168,579	$498,194	41,972	$113,056	67,394	$215,875	42,125	$141,999	1,894,516	$6,304,671	1905
1906	1,475,961	5,620,875	348,875	1,046,951	254,812	730,235	109,141	382,109	30,834	116,222	2,219,044	7,896,392	1906
1907	1,295,113	5,915,227	561,973	1,799,290	184,173	547,757	85,190	337,384	43,424	181,718	2,169,873	8,781,366	1907
1908	1,651,770	7,524,251	644,133	1,733,379	218,513	554,197	68,827	274,089	23,730	99,867	2,606,973	10,185,783	1908
1909	1,705,302	7,610,550	464,873	1,114,839	120,712	274,110	56,556	231,029	48,034	207,624	2,305,477	9,438,151	1909
1910	1,450,267	7,774,390	554,322	1,764,055	254,218	773,409	114,026	559,666	40,221	214,802	2,413,054	11,086,322	1910
1911	1,320,705	8,552,512	1,021,356	4,493,966	303,823	1,215,692	120,704	752,283	45,378	363,024	2,820,966	16,198,833	1911
1912	1,904,258	10,776,987	1,303,365	3,410,928	638,528	1,600,444	170,384	791,023	52,594	310,847	4,060,129	16,890,229	1912
1913	1,964,379	9,136,616	1,402,916	3,687,446	267,654	623,424	77,377	271,078	34,167	140,914	3,746,914	13,859,478	1913
1914	2,201,574	12,482,110	997,823	3,600,075	662,478	2,260,614	157,792	735,219	48,165	281,924	4,067,832	19,719,942	1914
1915	1,922,296	11,907,202	1,870,373	5,619,436	484,408	1,356,469	126,570	588,903	85,694	458,000	4,489,341	19,930,010	1915
1916	2,119,442	13,147,994	1,753,546	6,446,168	715,238	2,434,627	265,184	1,430,143	66,179	364,496	4,919,589	23,823,428	1916
1917	2,484,881	29,058,778	2,298,466	15,120,419	877,713	5,375,713	193,708	1,634,600	67,552	660,868	5,922,320	51,850,017	1917
1918	2,618,559	25,313,837	2,418,212	16,142,604	1,366,859	8,756,598	216,572	2,068,784	57,367	596,000	6,677,569	52,877,823	1918
1919	1,265,543	17,143,017	1,657,434	14,982,542	1,348,462	9,450,772	230,229	2,809,310	90,533	1,131,662	4,592,201	45,552,714	1919
1920	1,475,780	19,851,816	1,613,434	9,751,845	1,022,708	4,712,575	192,311	1,579,963	91,276	1,154,013	4,395,509	37,050,212	1920
1921	1,758,794	16,539,177	440,471	1,938,263	247,606	990,424	109,783	649,480	48,319	352,699	2,604,699	20,470,043	1921
1922	2,075,397	19,719,158	1,657,556	7,709,011	562,496	2,369,396	174,312	949,312	31,604	258,799	4,501,428	31,006,027	1922
1923	1,878,330	17,727,572	2,455,136	12,337,580	527,145	2,542,759	163,752	957,439	38,977	344,078	5,063,340	33,909,428	1923
1924	1,449,724	14,840,946	2,613,068	13,191,793	1,027,183	4,931,172	182,207	1,312,969	33,741	304,809	5,305,923	34,581,689	1924
1925	1,065,290	15,243,243	2,105,240	11,473,271	1,065,395	4,701,847	164,199	1,702,243	50,774	682,235	4,450,898	33,802,839	1925
1926	2,157,087	21,328,739	3,338,349	17,987,527	902,443	4,518,929	202,527	1,700,563	52,476	544,247	6,652,882	46,080,005	1926
1927	1,320,563	16,880,670	1,414,756	8,638,551	507,641	2,761,638	252,629	2,307,569	70,438	853,100	3,566,072	31,441,534	1927
1928	1,944,061	18,902,050	2,785,464	18,512,649	991,504	564,567	297,886	2,140,685	51,195	505,017	6,070,110	45,624,968	1928
1929	1,693,050	19,388,299	2,570,506	15,551,647	860,876	4,659,754	172,070	1,302,887	73,740	769,869	5,370,242	41,672,456	1929
1930	848,787	11,172,954	3,150,652	12,773,894	596,000	2,162,306	329,988	3,011,505	63,560	764,254	4,988,987	29,884,813	1930
1931	1,695,782	16,161,532	2,978,512	10,226,769	536,909	1,726,203	170,208	1,119,332	51,124	462,800	5,432,535	29,696,636	1931
1932	2,104,727	10,803,982	2,116,573	6,368,695	821,128	2,301,408	149,351	606,798	68,709	368,522	5,260,488	20,449,405	1932
1933	2,182,371	14,649,771	2,183,443	10,498,358	658,245	3,028,584	161,633	884,276	41,006	345,310	5,226,698	29,406,294	1933
1934	2,626,002	17,687,617	3,822,602	15,349,445	735,055	2,651,538	235,560	1,197,000	51,367	155,230	7,470,586	37,040,830	1934
1935	823,175	7,216,754	3,254,528	13,767,517	852,730	3,414,160	188,918	1,263,479	36,475	348,024	5,155,826	26,009,934	1935
1936	2,482,555	19,648,482	4,589,270	18,430,508	1,106,983	4,094,532	218,232	1,453,566	57,908	452,125	8,454,948	44,079,213	1936
1937	2,101,154	21,590,206	3,619,298	18,151,343	729,114	3,507,933	135,078	1,096,905	69,394	682,031	6,654,038	45,028,418	1937
1938	2,523,123	19,663,910	3,222,104	12,350,571	786,859	2,848.266	216,732	1,342,715	42,726	341,788	6,791,544	36,547,250	1938
1939	1,971,338	18,560,539	2,509,519	12,656,697	626,412	2,905,286	103,156	708,013	28,036	280,036	5,239,211	35,110,571	1939
1940	953,381	9,402,841	2,908,025	15,770,772	860,539	4,312,766	284,130	2,122,330	22,303	219,742	5,028,378	31,828,451	1940
1941	1,164,888	15,952,391	4,636,649	32,593,271	710,507	4,844,060	356,213	3,595,982	38,246	480,998	6,906,503	57,466,702	1941
1942	912,006	13,804,764	2,818,650	22,565,374	942,789	7,178,696	372,537	4,442,108	43,127	686,567	5,089,109	48,677,509	1942
1943	1,982,175	30,381,755	2,322,057	18,701,467	882,578	6,755,829	158,734	1,937,981	50,965	802,162	5,396,509	58,579,194	1943
1944	1,580,757	24,254,327	2,087,322	16,924,966	985,725	7,565,526	187,053	2,278,938	36,939	584,787	4,877,796	51,608,544	1944
1945	1,173,356	18,260,328	2,239,282	18,201,352	688,485	5,312,578	195,860	2,078,066	41,709	676,640	4,338,692	44,528,964	1945
1946	1,065,898	22,880,873	2,057,121	24,685,452	617,155	7,120,923	193,061	3,231,992	37,874	748,321	3,971,109	58,667,561	1946
1947	1,876,239	45,390,823	1,723,617	32,269,419	500,211	8,983,297	148,715	3,522,434	53,684	1,131,912	4,302,466	91,297,885	1947
1948	1,635,463	44,994,233	1,304,044	31,617,066	774,661	16,345,475	241,799	6,278,595	54,645	1,459,245	4,010,612	100,694,614	1948
1949	967,626	25,504,967	2,682,330	42,921,708	499,226	7,572,386	192,352	4,004,944	50,007	1,258,463	4,391,541	81,262,468	1949
1950	1,166,052	34,211,966	1,095,534	25,663,330	780,684	15,269,095	191,501	5,131,834	54,321	1,550,183	3,288,092	81,826,408	1950
1951	816,831	26,017,227	1,559,748	32,505,086	721,152	10,950,656	345,159	5,131,859	91,425	2,596,635	3,534,315	77,201,463	1951
1952	1,181,162	33,783,498	1,172,168	21,705,200	966,660	15,140,209	197,004	4,201,837	56,970	1,521,732	3,573,964	76,352,476	1952
1953	994,293	27,996,373	955,528	17,439,908	800,882	11,214,236	127,676	2,894,714	56,222	1,442,103	2,934,601	60,987,334	1953
1954	804,194	23,235,032	1,149,422	22,477,095	1,029,295	15,093,798	171,643	3,926,204	52,600	1,407,488	3,207,154	66,139,617	1954
1955	661,607	21,045,719	1,270,303	27,044,751	363,657	6,322,832	114,584	3,056,498	47,818	1,369,984	2,457,969	58,839,784	1955
1956	1,015,558	34,912,265	1,116,769	24,927,897	675,034	12,873,940	95,940	2,763,127	47,053	1,471,651	2,950,354	76,948,880	1956
1957	763,030	26,694,705	713,774	16,600,404	829,816	15,344,031	87,290	2,391,960	47,984	1,533,286	2,441,894	62,564,386	1957
1958	488,354	16,489.687	1,547,651	32,129,387	754,806	12,685,328	101,991	2,686,153	51,778	1,540,728	2,944,580	65,531,283	1958
1959	584,503	21,419,766	634,945	15,002,039	415,326	8,498,434	98,298	3,039,412	45,267	1,534,259	1,778,339	49,493,910	1959
1960	1,166,000	39,644,000	731,000	16,813,000	626,974	12,852,905	77,978	2,339,340	46,870	1,406,100	2,648,819	73,055,345	1960
1961	1,305,142	46,985,112	1,332,099	38,630,871	528,457	14,004,110	82,212	2,630,784	51,841	1,866,276	3,299,751	104,117,153	1961
Aver.	847,553	27,123,827	1,085,130	22,664,476	718,360	12,097,637	141,756	3,243,110	54,399	1,582,396	2,847,198	66,711,446	Aver.

NOTE: Figures for the last year shown are PACIFIC FISHERMAN'S own compilation from original sources. Figures for previous years are from official Fish & Wildlife Service data, to which have been added fish canned elsewhere from fish caught and frozen in Alaska. "Average" is for the ten years preceding the current year. Steelheads are included with Kings.

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CANNED SALMON: Copper River Chinook and Sockeye; Alaska Reds, Cohoe, Pinks and Chums; Puget Sound and Columbia River Salmon. Packed 48, ½-lb. flats and 48, 1-lb. talls.

CANNED CRABMEAT: Fancy pack Dungeness and King varieties. Canned in 48, ½-lb. flats, 24, ½-lb. flats.

★

LABELS:
ROYAL RED—Red Sockeye
ROYAL RED—Red Chinook
ROYAL RED—Dungeness Crab
ROYAL RED—Razor Clams
ROYAL RED—North Pacific Shrimp
ROYAL PINK—Pink Salmon
SNO-TIP—Chum Salmon

ROYAL PINK
ALASKA PINK SALMON
SNO-TIP ALASKA Salmon
CANTEEN ALASKA SALMON
Royal Red ALASKA RED SALMON
Royal Red ALASKA RED SALMON
Royal Red ALASKA CRAB MEAT

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Southeast Alaska Canned Salmon Pack by Subdivisions

KETCHIKAN DISTRICT (Cases)						YEAR	WRANGELL-PETERSBURG DISTRICT (Cases)					
Kings	Reds	Cohoes	Pinks	Chums	TOTAL		Kings	Reds	Cohoes	Pinks	Chums	TOTAL
78	14,724	9,848	300,114	116,170	440,934	1956	362	8,720	9,456	98,075	40,116	156,729
84	17,804	12,746	120,358	117,063	268,055	1957	715	12,481	7,583	78,692	73,409	172,880
50	29,332	16,234	336,588	100,902	483,106	1958	264	16,124	8,322	158,997	91,303	275,010
80	6,803	4,960	123,993	40,462	176,298	1959	449	10,462	10,768	117,916	32,597	172,192
327	2,571	2,488	43,246	29,036	77,668	1960	174	6,102	1,012	35,518	15,769	58,575
117	11,439	16,552	273,232	92,711	394,051	1961	236	13,649	6,915	221,778	59,598	302,176

NORTHERN DISTRICT (Cases)						YEAR	WEST COAST DISTRICT (Cases)						
Kings	Reds	Cohoes	Pinks	Chums	TOTAL		Kings	Reds	Cohoes	Pinks	Chums	TOTAL	REGIONAL TOTAL
806	42,761	19,536	108,618	110,727	282,448	1956	26	6,646	7,657	127,465	27,269	169,063	1,049,174
518	38,599	26,325	74,077	153,769	293,288	1957	41	13,628	10,893	131,094	20,515	176,171	910,394
514	29,530	19,109	113,089	138,490	300,732	1958	15	6,881	7,647	94,225	26,431	135,199	1,194,047
672	26,815	36,107	163,578	71,650	298,822	1959	8	17,313	6,155	66,409	15,645	105,530	752,842
329	25,237	9,035	26,935	41,324	102,860	1960	34	9,679	4,698	31,522	19,507	65,440	304,543
88	39,682	22,584	339,104	124,314	525,772	1961	---	---	---	---	---	*	1,221,999

NOTE: Data are from records of the Alaska Department of Fisheries and Game, and may show slight discrepancies from totals derived by direct report from operators. In general these will be due to different methods of counting cases. *Included in Ketchikan data.

failed to materialize in the cycle year.

Few Reds in Sight for 1962

Bristol Bay forecast for 1962 is stated as "most probably" 9,000,000 Reds, before any Japanese catch is taken; but with the possibility that it may vary as much as 3,000,000 fish, plus or minus.

Inasmuch as the normal escapement quota for the streams falling into Bristol Bay is usually considered by scientists as 8 to 9 million, and not less than 6 million, it will readily be seen that the commercial fishery cannot expect to produce a large pack there in 1962.

Officials have indicated the possibility that commercial operations may have to be suspended for the year, although it is generally believed that some method will be found to permit a minor fishery to sustain the economy of the resident population of Bristol Bay.

The Great Prince William Surpise

● The whole, long, dramatic history of the Alaska salmon industry has held no more startling surprise than the Pink run which appeared from nowhere on Prince William Sound—mostly on the eastern side—in 1961.

The Sound had been closed to fishing for the year, as it had on the cycle year in 1959; because no run was expected beyond the barest needs for escapement.

It was almost by accident that the ADF&G officers charged with responsibility for Prince William Sound detected the appearance of an astonishing run of Pinks. This was almost accidental because, in the complete lack of a fishery, a run of salmon may be well into the stream before it will be observed.

Here is an illustration of the difficulty of management of a salmon resource with no fishery, or when fishing is permitted only one or two days a week.

With verification of the surprise run of 1961, Prince William Sound was opened to fishing forthwith and the industry given every encouragement to make the maximum catch possible, as the danger of over-spawning was readily apparent.

Gear returning from Bristol Bay

Pacific Canned Salmon Packs and Values

Packs reduced to basis of full cases of 48 lbs. net. Values calculated from best data available.

Year	Alaska		Washington		Oregon		California		U.S. Total		British Columbia		Grand Total	
	Cases	Value ($)	Cases	Value ($)	Cases	Value ($)	Cases	Value($)	Cases	Value ($)	Cases	Value ($)	Cases	Value ($)
1939	5,239,211	35,110,571	478,246	3,944,000	251,070	3,640,898	...	...	5,971,527	42,695,469	1,539,070	10,449,945	7,510,597	53,145,414
1940	5,028,378	31,828,451	222,808	2,825,000	297,716	4,129,220	...	...	5,548,902	38,782,681	1,467,227	11,427,923	7,016,129	50,209,908
1941	6,906,503	57,466,702	491,311	6,162,000	399,840	5,925,444	1,125	13,500	7,798,779	69,567,646	2,248,870	18,406,545	10,047,649	87,974,191
1942	5,089,109	48,677,509	366,065	6,909,000	397,331	6,890,162	...	...	5,852,515	62,476,671	1,811,560	20,050,238	7,664,075	82,526,909
1943	5,396,509	58,579,194	149,175	2,309,000	130,707	2,857,246	767	16,000	5,677,158	63,761,440	1,258,221	11,673,469	6,935,379	75,434,909
1944	4,877,796	51,606,544	81,490	1,774,000	159,783	3,445,244	864	17,660	5,119,943	56,843,448	1,097,558	11,479,093	6,217,521	68,322,541
1945	4,338,692	44,528,964	414,258	4,845,000	155,292	3,287,812	2,755	38,000	4,913,335	52,699,776	1,739,311	18,409,962	6,652,646	71,109,738
1946	3,971,109	58,667,561	385,437	13,020,000	206,563	7,165,645	5,034	153,000	4,568,149	79,006,206	1,348,138	17,532,462	5,916,287	96,538,668
1947	4,302,466	91,297,885	957,429	21,420,000	338,852	11,133,690	13,917	513,000	5,612,664	124,364,575	1,505,157	24,900,000	7,117,379	149,264,575
1948	4,014,891	96,528,730	484,102	12,685,858	314,556	10,956,513	11,417	366,095	4,824,966	120,537,196	1,308,137	26,579,000	6,133,103	147,116,196
1949	4,391,591	81,263,168	973,740	17,481,282	158,472	4,665,290	1,113	21,240	5,524,916	103,430,980	1,436,464	27,654,489	6,961,380	131,085,469
1950	3,272,643	81,403,511	670,341	18,285,000	176,063	6,193,000	...	...	4,119,047	105,881,511	1,482,560½	30,155,177	5,602,056	138,885,502
1951	3,631,918	84,649,330	906,252	21,357,974	175,091	6,631,198	...	...	4,713,261	112,638,502	1,955,475	46,261,080	6,668,736	158,899,582
1952	3,574,191	76,357,016	749,591	17,122,352	140,565	4,784,421	703	20,292	4,455,022	99,636,808	1,293,435	27,751,435	5,741,490	127,388,243
1953	2,934,667	60,987,334	848,422	18,680,750	127,808	4,063,675	436	15,425	3,911,333	83,747,184	1,821,269	35,060,600	5,732,602	118,807,784
1954	3,094,753	63,356,724	973,941	25,727,689	92,291	3,130,700	2,162	65,431	4,163,147	92,280,544	1,742,736	39,293,176	5,905,883	131,573,720
1955	2,457,969	58,696,300	764,719	17,569,902	138,250	4,996,355	847	30,611	3,286,785	81,293,168	1,406,100	31,644,673	4,692,885	112,937,841
1956	2,950,354	76,948,880	334,505	11,097,115	147,105	5,401,329	694	25,424	3,432,658	93,472,748	1,118,279	32,231,241	4,550,937	125,703,989
1957	2,441,894	62,564,386	624,842	18,296,970	118,161	4,948,224	2,174	78,131	3,187,071	85,887,711	1,424,264	35,872,414	7,798,406	207,647,836
1958	2,944,580	65,531,283	625,909	20,659,030	134,754	6,053,733	1,005	46,230	3,706,248	92,290,276	1,908,056	56,740,772	5,614,304	149,031,048
1959	1,778,339	49,493,910	585,487	18,118,907	101,712	4,239,463	...	...	2,465,538	71,852,280	1,077,097	35,280,411	3,542,635	107,132,691
1960	2,648,819	73,055,345	201,398	8,695,057	61,799	2,966,921	...	...	2,912,016	84,717,323	631,150	22,768,000	3,543,166	107,485,323
1961	3,299,751	104,117,153	300,443	11,891,178	81,938	4,230,438	...	...	3,682,132	120,238,769	1,403,994	45,778,726	5,086,126	166,017,495

NOTE: Data for current year are from original sources, and are based on origin of fish canned. Data for previous years generally are from official sources, which disregard origin in cases where fish caught in one area are canned in another.

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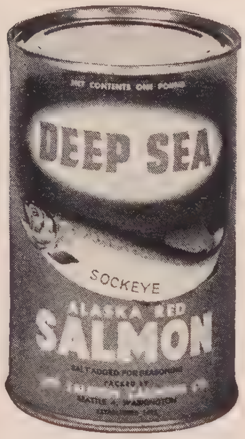
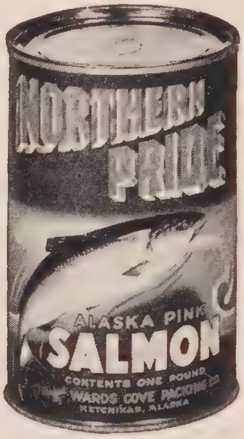


Operations at:

Ekuk
Naknek
Egegik, Bristol Bay
Kenai, Cook's Inlet
Moser Bay, Kodiak
Petersburg
Craig



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moved into Prince William Sound and made a pack; brine tenders carried fish to other areas where canning capacity was available; canneries which had been active during the Copper River season were gotten into operation and run to capacity.

Just how big a pack this Prince William Sound Surprise actually yielded perhaps never will be known because of the degree to which fish were transferred under refrigeration to other districts for canning.

The vigor with which the emergency situation was met, and the courage with which the ADF&G officers coped with the threatened over-spawning, were regarded by the industry as indicative of the realistic and effective performance which the Alaska Department of Fish and Game is bringing to its management of the salmon resources.

- Icy Strait and its adjacent waters provided the locale for the third big feature of Alaska's 1961 Salmon Spectacular.

The run on Bristol Bay was just beginning to taper-off when word came from Icy Strait that the fish were in, and the volume large. Brine scows which could be spared set out from the bay; tenders from other closer areas came quickly—and the hungry seiners from as far south as Tacoma set out for the scene.

The fishing *was* good, and it was protracted beyond the usual duration of such a run, which was fortunate indeed and helped to make for profitable cannery operation.

Just how many cases of canned salmon actually came from the northern fishery will never be accurately known, for refrigerated tender deliveries spread to the catch to the more southerly districts where local fishing was light and capacity was available to share in the northern run.

1962 Regulation Changes

- Bristol Bay gear-timetable, which has regulated the fishing time of the several principal fishing areas of the Bay according to the amount of gear registered to fish in each, was abandoned by the Alaska Board of Fish and Game in December.

The 1962 regulations provided that fishing periods during the main run on Bristol Bay will be set entirely by field announcement of the area management staff on the basis of the amount of gear and the run of salmon at the moment.

In the past two years, and particularly in 1961, the gear-timetable actually was shelved early in the season

UNITED STATES CANNED SALMON PACK

YEAR	Red or Sockeye	Pink	Chum or Keta	Med. Red Coho or Silverside	King or Chinook	Steelhead	GRAND TOTAL	YEAR
1916	2,217,259	1,755,433	1,260,131	529,096	579,615	19,013	6,360,547	1916
1917	2,908,995	3,432,573	1,173,040	431,160	597,704	23,937	8,567,409	1917
1918	2,711,251	2,425,500	1,677,416	647,020	589,786	25,170	8,076,143	1918
1919	1,338,401	2,079,775	1,995,446	593,192	664,844	19,899	6,630,347	1919
1920	1,541,286	1,618,103	1,090,103	251,533	586,749	13,659	5,101,705	1920
1921	1,870,396	845,184	288,539	238,595	369,756	10,142	3,622,612	1921
1922	2,181,197	1,659,781	650,079	491,643	313,992	24,983	5,231,675	1922
1923	1,974,495	2,930,985	702,536	415,084	362,660	25,997	6,411,757	1923
1924	1,533,237	2,619,013	1,266,654	418,336	378,218	29,862	6,245,320	1924
1925	1,187,784	2,659,144	1,214,304	477,159	481,071	14,859	6,034,321	1925
1926	2,218,638	3,334,787	1,067,053	429,942	408,136	33,128	7,491,684	1926
1927	1,430,116	1,993,679	656,911	459,209	481,914	31,643	5,053,472	1927
1928	2,010,956	2,791,061	1,302,422	445,496	335,907	16,605	6,902,447	1928
1929	1,819,469	3,298,127	1,115,924	367,847	358,085	24,104	6,983,556	1929
1930	1,232,340	3,154,364	683,451	566,250	390,756	16,932	6,044,093	1930
1931	1,792,111	3,684,092	615,441	285,930	390,563	12,355	6,780,492	1931
1932	2,200,104	2,118,250	1,006,776	257,735	318,770	13,218	5,914,853	1932
1933	2,321,784	2,726,783	727,917	243,055	323,176	18,027	6,360,742	1933
1934	2,876,981	3,825,989	849,721	371,521	322,968	14,901	8,361,990	1934
1935	882,408	3,624,148	893,612	364,625	257,773	14,888	6,037,454	1935
1936	2,553,160	4,590,422	1,249,188	287,224	283,941	19,282	8,983,217	1936
1937	2,168,528	3,947,271	786,397	236,708	369,725	17,568	7,526,197	1937
1938	2,677,723	3,222,559	845,433	294,257	218,989	15,248	7,274,209	1938
1939	2,020,200	2,791,790	668,274	227,143	238,827	25,293	5,971,527	1939
1940	1,040,241	2,910,972	919,368	375,668	269,217	33,436	5,548,902	1940
1941	1,308,740	4,790,573	851,902	440,653	372,624	33,162	7,779,654	1941
1942	1,194,985	2,819,501	1,089,555	406,032	320,531	21,911	5,852,515	1942
1943	2,004,204	2,384,186	895,265	191,135	185,340	16,261	5,676,391	1943
1944	1,618,729	2,087,621	987,382	202,364	203,761	19,222	5,119,079	1944
1945	1,227,162	2,549,848	693,803	239,086	181,367	19,314	4,910,580	1945
1946	1,350,629	2,060,243	694,728	217,004	222,744	17,767	4,563,115	1946
1947	1,911,284	2,363,069	666,497	293,058	356,665	22,091	5,612,664	1947
1948	1,734,091	1,308,689	1,054,637	370,610	338,037	20,362	4,826,426	1948
1949	1,075,427	3,236,317	718,878	277,495	207,868	8,931	5,524,916	1949
1950	1,290,249	1,097,811	1,317,761	352,126	205,981	10,534	4,274,462	1950
1951	936,120	2,001,352	981,524	466,880	244,832	14,862	4,645,570	1951
1952	1,413,670	1,175,054	1,290,667	397,534	159,086	19,011	4,455,022	1952
1953	1,162,614	1,396,388	966,418	207,144	158,437	19,645	3,910,646	1953
1954	1,323,830	1,151,126	1,329,756	215,123	129,933	13,379	4,163,147	1954
1955	749,328	1,682,000	466,353	198,806	176,661	13,737	3,361,885	1955
1956	1,182,554	1,129,346	758,059	188,571	165,957	8,171	3,432,658	1956
1957	963,566	943,564	924,543	203,553	142,066	7,605	3,184,897	1957
1958	948,965	1,550,025	911,816	150,699	137,425	6,313	3,705,243	1958
1959	736,886	819,825	582,096	190,560	126,274	9,897	2,465,538	1959
1960	1,297,986	734,776	678,424	94,560	100,096	6,174	2,912,016	1960
1961	1,444,508	1,398,315	580,737	140,607	110,610	7,355	3,682,132	1961
10 Yr. Average	1,071,552	1,258,345	888,965	231,343	154,076	11,879	3,616,160	10 Yr. Average

NOTE: Figures represent full cases of 48 lbs. net. Figures for the last year shown are from PACIFIC FISHERMAN's compilation; those for previous years have been revised from official data. "Average" is for the ten years preceding the current year.

1961-SOUTHEAST ALASKA CANNED SALMON PACK

COMPANY	CANNERY LOCATION	RED or SOCKEYE			PINK			CHUM			COHO			KING	GRAND TOTAL (full cases)
		1-lb. Talls etc.	1/2-lb Flats (8 doz.)	TOTAL	1-lb. Talls etc.	1/2-lb. Flats (8 doz.)	TOTAL	1-lb. Talls etc.	1/2-lb. Flats (8 doz.)	TOTAL	1-lb. Talls etc.	1/2-lb. Flats (8 doz.)	TOTAL		
Alaska Packers Association	Ketchikan	12	---	12	383	---	383	758	---	758	47	---	47	---	1,200
American Packing Co.	Hydaburg	5	---	5	723	---	723	958	---	958	56	---	56	---	1,742
Angoon Fish Trap Enterprise	Hawk Inlet	410	---	410	15,389	---	15,389	1,701	---	1,701	92	---	92	---	17,592
Annette Island Canning Co.	Metlakotla	1,274	1,006	2,280	46,356	7,508	53,864	8,814	1,991	10,805	2,195	134	2,329	---	69,278
Bellingham Canning Co.	Excursion Inlet	866	2,234	3,100	2,251	2	2,253	1,534	-	1,534	2,670	3,466	6,136	16	13,039
Columbia Wards Fisheries	S. E. Alaska	2,753	169	2,922	45,235	1,588	46,823	16,905	168	17,073	2,054	18	2,072	65	68,955
Excursion Inlet Packing Co.	S. E. Alaska	3,487	6,375	9,862	36,459	7,066	43,525	18,245	219	18,464	4,349	3,717	8,066	68	79,985
Fidalgo Island Packing Co.	Ketchikan	2,020	280	2,300	31,096	319	31,415	10,051	50	10,101	1,151	---	1,151	29	44,996
Fishermen's Packing Corp.	S. E. Alaska	1,251	---	1,251	12,692	- -	12,692	6,588	---	6,588	844	---	844	4	21,379
Haines Packing Co.	Letnikof Cove	1,120	4,722	5,842	5,758	2,347	8,105	5,585	5,446	11,031	854	454	1,308	---	26,286
P. E. Harris Co.	Hawk Inlet	2,736	2	2,738	48,950	81	49,031	23,525	100	23,625	1,771	12	1,783	4	77,181
Hydaburg Co-op Ass'n.	Hydaburg	468	- -	468	23,222	---	23,222	7,150	---	7,150	768	---	768	---	31,608
Juneau Cold Storage Co. Inc.	Juneau	1,764	---	1,764	5,889	-	5,889	10,593	---	10,593	1,598	---	1,598	---	19,844
Kayler-Dahl Fish Co., Inc.	Petersburg	---	6,170	6,170	10,090	6,200	16,290	7,960	1,570	9,530	770	597	1,367	---	33,357
Keku Canning Co.	Kake	771	---	771	35,995	---	35,995	7,565	---	7,565	467	---	467	---	44,798
Klawock Oceanside Packing Co.	Klawock	997	---	997	25,685	- -	25,685	7,548	- -	7,548	808	---	808	6	35,044
Lutak Fish Co.	Haines	832	---	832	456	---	456	956	---	956	156	---	156	---	2,400
Nakat Packing Corp.	Waterfall	3,870	82	3,952	69,722	538	70,260	24,155	39	24,194	3,458	12	3,470	56	101,932
New England Fish Co.	S. E. Alaska	5,686	52	5,738	120,714	7,093	127,807	30,022	2,590	32,612	4,454	730	5,184	39	171,380
Pacific American Fisheries	S. E. Alaska	582	1,829	2,411	29,004	10,301	39,305	7,461	5,285	12,746	829	542	1,371	46	55,879
Pelican Pkg. Co.	Pelican	5,010	529	5,539	66,374	1,036	67,410	20,968	522	21,490	1,728	---	1,728	3	96,170
Petersburg Processors, Inc.	Petersburg	374	---	374	20,793	---	20,793	8,826	--	8,826	982	---	982	---	30,975
Wards Cove Packing Co., Inc.	S. E. Alaska	1,670	152	1,822	35,676	2,002	37,678	10,276	124	10,400	1,745	32	1,777	69	51,746
Whiz Fish Products Co.	Kake	852	---	852	39,784	---	39,784	8,361	---	8,361	516	---	516	---	49,513
Whitney & Co.	S. E. Alaska	2,065	---	2,065	28,616	643	29,259	8,111	---	8,111	1,409	---	1,409	12	40,856
Miscellaneous		293	---	293	30,078	---	30,078	3,903	---	3,903	566	---	566	24	34,864
TOTAL		41,168	23,602	64,770	787,390	46,724	834,114	258,519	18,104	276,623	36,337	9,714	46,051	441	1,221,999

and the fishery administered by the more flexible field announcement method.

These developments reflect the effectiveness of the ADF&G's flexible policy under which the management officers in the field are entrusted with full responsibility and authority for handling the fishery according to conditions as they develop.

The board is severely curtailing the Egegik fishing area, and limiting 1962 gear there to setnets.

A large area westerly of the Naknek River also is restricted to setnet fishing; although it is subject to opening to gillnetting if adequate escapement is assured up the Naknek.

Purse seine opening dates in Southeast Alaska were set as follows: Icy Strait and Western districts, June 25; Outside section of West Coast district, July 2; Southern district and southeastern section of Clarence Strait district, July 18; all other openings will be by field announcement.

Gillnet mesh size restrictions were dropped in the Red Lake-Lake Bay area of Southeast Alaska; and gillnets generally were permitted to be 60 meshes deep for nets with mesh sizes 6" or less.

1961 Yukon Yield

- The Yukon River produced 120,933 Kings and 42,218 Chums in the 1961 season, and the Kuskokwim 18,918 Kings and 5,044 Silvers. Four canneries and six salteries harvested the King run on the Yukon this year. A freezership and mild-cure floater arrived too late in the season to participate in the King catch. A land-based mild-cure operation, a freezership, and operators shipping salmon out to canneries and the fresh fish market harvested the Kuskokwim King run.

The 1961 King salmon runs in these two rivers apparently were above the average in magnitude. The Alaska Department of Fisheries feels that a near-maximum harvest was realized on the Yukon King salmon run while still providing for an upriver subsistence fishery and an adequate escapement. The Kuskokwim commercial fishery is still in an experimental phase to provide limited sampling of the total run and as such, was held to two days commercial fishing per week in 1961. Regulations for 1962 will again porvide for a limited fishery of two days per week, based on the provision that there is no marked increase in effort.

The most important use of salmon in this area is for subsistence, and the Department of Fish and Game feels that commercialization should be allowed only on surpluses available beyond that needed for subsistence and escapement.

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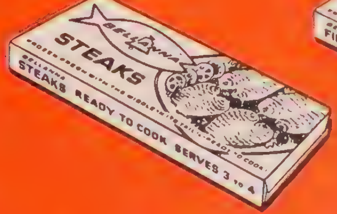

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PACK OF ALASKA CANNED SALMON BY DISTRICTS

Year	SOUTHEAST ALASKA							CENTRAL ALASKA							WESTERN ALASKA								TOTAL CASES	Year
	Plants Oper.	Red	Pink	Chum	Coho	King	Total Cases		Red	Pink	Chum	Coho	King	Total Cases	Plants Oper	Red	Pink	Chum	Coho	King	Total Cases			
1905	13	207,375	142,008	37,685	41,079	5,460	433,607	9	345,575	3,235	...	16,518	6,427	371,755	25	1,021,478	23,354	4,287	9,797	30,238	1,089,154	47	1,894,516	1905
1906	20	250,567	326,713	131,405	84,149	2,396	795,230	8	451,659	3,188	...	10,316	7,861	473,024	19	798,504	19,866	123,407	16,278	20,680	978,735	47	2,246,989	1906
1907	22	177,149	542,268	140,392	58,632	1,289	919,730	8	482,968	10,255	...	15,258	14,355	522,836	18	657,687	18,244	44,025	11,784	27,794	759,534	48	2,202,100	1907
1908	23	198,366	592,638	180,204	48,963	2,552	1,022,723	8	377,101	30,661	...	11,543	6,416	425,721	19	1,087,211	20,834	38,309	8,426	14,824	1,169,604	50	2,618,048	1908
1909	19	280,542	455,999	83,001	39,920	857	860,319	8	358,285	5,581	...	10,275	16,913	391,054	18	1,074,667	3,293	37,711	6,361	30,264	1,152,296	45	2,403,669	1909
1910	23	282,265	494,363	231,735	82,620	402	1,091,385	10	364,875	31,797	131	19,928	15,786	432,517	19	825,447	31,348	22,352	11,641	24,087	914,138	52	2,438,777	1910
1911	32	238,895	969 866	290,843	100,793	1,441	1,601,838	11	412,647	24,143	2,008	17,326	15,862	471,986	21	669,163	27,347	10,969	11,585	28,075	747,139	64	2,820,963	1911
1912	51	254,851	1,053,847	589,578	134,914	6,607	2,039,777	14	422,347	136,891	29,591	19,782	14,198	622,809	22	1,227,060	114,247	19,359	15,088	21,789	1,397,543	87	4,060,129	1912
1913	42	190,685	1,299,400	254,689	58,071	1,006	1,803,851	14	364,253	49,299	5,038	13,284	15,393	447,267	23	1,419,381	54,217	7,927	11,768	11,768	1,505,315	79	3,756,433	1913
1914	45	294,842	872,504	597,435	112,163	12,087	1,889,031	14	395,110	195,830	17,693	36,739	11,132	656,504	23	1,511,622	29,489	47,350	8,890	24,946	1,622,297	82	4,167,832	1914
1915	46	229,709	1,820,171	375,260	90,161	25,135	2,540,436	17	500,000	43,951	39,404	26,062	22,978	632,395	23	1,192,248	6,251	69,744	10,347	37,581	1,316,171	86	4,489,002	1915
1916	54	182,075	1,335,291	505,405	182,405	18,482	2,223,658	19	572,096	371,845	64,320	55,298	22,160	1,085,719	27	1,365,271	46,410	145,513	27,481	25,537	1,610,212	100	4,919,589	1916
1917	60	202,951	2,149,075	750,187	152,538	29,657	3,284,408	26	725,925	137,955	86,764	36,065	19,236	1,005 945	29	1,556,005	11,436	40,762	5,105	18,659	1,631,967	113	5,922,320	1917
1918	75	226,108	2,034,997	954,498	152,689	17,248	3,385,540	29	662,829	358,491	313,196	47,904	21,818	1,404,238	30	1,729,622	24,724	98,965	15,979	18,301	1,887,591	134	6,677,369	1918
1919	75	240,208	1,521,897	1,146,943	169,300	30,016	3,108,364	30	437,341	107,924	163,530	54,596	12,075	775,466	28	526,794	27,613	37,989	6,242	109,642	707,280	133	4,591,110	1919
1920	80	199,829	1,026,862	830,538	112,178	32,869	2,202,276	35	533,122	510,350	148,122	67,744	20,417	1,279,755	28	742,829	76,222	44,048	12,389	37,990	913,478	143	4,395,509	1920
1921	30	105,084	416,958	182,272	90,845	9,034	804,193	27	596,200	13,116	28,305	11,425	10,225	659,271	27	1,057,510	10,397	37,029	7,513	29,060	1,141,509	84	2,604,973	1921
1922	57	121 652	1,313,280	425,947	128,023	5,777	1,994,679	36	567,576	331,005	88,321	36,623	8,930	1,032,455	28	1,386,169	13,261	48,228	9,666	16,897	1,474,221	121	4,501,355	1922
1923	67	178,962	2,257,768	434,490	129,990	12,857	3,014,067	39	441,774	197,291	72,821	32,940	11,537	756,363	30	1,257,594	77	19,834	822	14,583	1,292,910	136	5,063,340	1923
1924	65	192 806	1,686 884	799,215	110,002	8,259	2,797,166	38	442,876	892,667	192,901	68 883	10,593	1,607,920	31	814,042	33,517	35,067	2,322	14,889	899,837	134	5,305,923	1924
1925	62	151,140.	1,701,849	835,599	94,539	12,493	2,795,611	37	364,721	402 801	199,797	68,267	19,289	1,054,875	30	549,429	590	29,999	1,393	18,992	600,403	129	4,450,898	1925
1926	61	173,891	2,158,699	618,397	96,389	10,679	3,058,055	43	630,505	1,144,180	243,808	104,309	23,683	2,146 485	28	1,352,691	35,470	40,238	1,829	18,114	1,448,342	132	6,652,882	1926
1927	62	115,664	581,728	224,696	114,331	9,131	1,045,823	47	320,159	833,028	253,410	138,243	42,948	1,587,788	29	884,740	...	29,262	55	18,404	932,461	138	3,566,072	1927
1928	60	106,793	2,137,796	566,689	145,323	5,596	2,962,197	62	431,924	643,816	378,499	152 066	32,567	1,638,872	29	1,405,344	3,852	46,316	497	13,032	1,469,041	151	6,070,110	1928
1929	59	161,580	1,541,463	290,742	97,850	6,982	2,098,617	70	455,997	1,028,790	498,873	68,538	36,526	2,088,544	30	1,075,473	253	71,261	5,862	30,232	1,183,081	159	5,370,242	1929
1930	57	216,743	2,296,270	283,553	155,844	10,894	2,963,304	68	270,310	839,751	281,111	170,741	32,123	1,594,036	27	361,734	14,631	31,336	3,403	20,543	431,647	152	4,988,987	1930
1931	41	148,485	2,038,388	277,225	88,841	14,926	2,567,865	49	439,572	940,124	193,131	81,275	27,567	1,681,669	25	1,107,725	...	66,553	92	8,631	1,183,001	115	5,432,535	1931
1932	31	140 356	1,380,093	582,290	88,293	23,637	2,214,669	34	659,539	720,893	145,660	60,363	32,317	1,618,772	22	1,304,832	15,587	93,178	695	12,755	1,427,047	87	5,260,488	1932
1933	38	81,122	1,477,608	425,869	95,629	8,130	2,088,358	31	486,528	703,696	207,363	64,548	23,792	1,485,927	23	1,614,721	2,139	25,013	1,456	9,084	1,652,413	92	5,226,698	1933
1934	47	104,413	2,622,186	393,904	159,509	15,606	3,295,618	45	707,754	1,198,457	307 649	74,832	27,005	2,315,697	22	1,813,835	1,959	33,502	1,219	8,756	1,859,271	114	7,470,586	1934
1935	46	159,506	2,209,373	541,152	141,501	11,496	3,063,028	44	391,088	1,045,155	302,011	47,198	24,338	1,809,790	9	272,581	...	9,567	219	641	283,008	99	5,155,826	1935
1936	46	219,531	2,959,774	784,455	136,043	22,105	4,121,908	46	839,243	1,598,585	295,956	80,608	31,820	2,846,212	24	1,423,781	30,911	26,572	1,581	3,983	1,486,828	116	8,454,948	1936
1937	45	165,170	2,138,264	503,235	86,912	30,613	2,924,194	47	459,399	1,480,658	190,425	42,028	31,234	2,209,744	24	1,476,585	376	35,454	138	7,547	1,520,100	116	6,654,038	1937
1938	39	189,880	1,886,104	473,619	140,791	16,339	2,706,733	42	484,518	1,336,000	253,905	75,596	20,146	2,170,165	17	1,848,725	...	59,335	345	6,241	1,914,646	98	6,791,544	1938
1939	48	195,907	1,474,269	293,316	65,906	2,364	2,031,762	47	657,198	1,034,623	237,148	37,250	21,023	1,987,242	24	1,118,233	627	95,948	...	5,399	1,220,207	119	5,239,211	1939
1940	46	125,462	1,452,037	484,476	155,577	1,539	2,219,091	42	384,266	1,441,266	343,072	126,878	18,359	2,314,475	11	443,653	14,088	32,991	1,675	2,405	494,812	99	5,028,378	1940
1941	47	137,861	3,631,491	321,118	193,751	1,812	4,286,033	44	413,658	1,005,029	333,618	159,023	30,825	1,942,153	19	613,369	129	55,771	3,439	5,609	678,317	105	6,906,503	1941
1942	47	121,083	1,758,741	597,373	189,210	2,033	2,668,779	44	352,475	1,051,359	328,860	180,698	34,916	1,948,308	7	438,111	8,550	16,556	2,629	6,178	472,024	98	5,089,109	1942
1943	34	85,313	1,042,610	672,359	92,245	1,868	1,894,395	34	582,287	1,277,915	167,809	66,311	37,421	2,131,743	14	1,314,575	1,532	42,410	178	11,676	1,370,371	81	5,396,509	1943
1944	38	131,580	1,081,334	655,188	88,380	1,765	1,958,247	45	461,718	1,002,056	286,498	96,255	29,718	1,876,245	13	987,459	3,932	44,039	2,418	5,456	1,043,304	94	4,877,796	1944
1945	41	129,514	1,039,521	265,845	107,425	2,582	1,544,887	43	434,872	1,198,665	331,654	85,506	30,041	2,080,738	8	609,132	1,623	92,551	3,103	9,086	715,495	92	4,341,120	1945
1946	41	59,029	999,443	321,037	94,074	1,612	1,475,195	48	350,728	1,053,605	257,909	96,301	25,356	1,783,899	20	656,141	4,073	38,209	2,686	10,906	712,015	108	3,971,109	1946
1947	40	56,032	680,693	260,666	72,434	4,019	1,073,844	47	470,056	1,034,475	196,731	74,388	34,790	1,810,430	21	1,350,151	8,449	42,814	1,893	14,885	1,418,192	107	4,302,466	1947
1948	39	39,317	683,972	403,959	165,033	5,973	1,298,254	57	318,638	616,822	291,977	69,259	34,774	1,331,470	24	1,277,508	3,250	78,725	7,507	13,898	1,380,888	120	4,010,612	1948
1949	36	39,485	2,102,604	243,080	125,059	1,046	2,511,274	55	391,244	580,438	221,089	59,409	37,213	1,289,393	21	529,859	...	44,140	4,411	11,974	590,384	112	4,391,051	1949
1950	36	49,475	535,662	500,422	116,344	560	1,202,463	55	513,985	558,263	242,301	68,233	40,386	1,423,158	21	590,048	1,609	35,056	6,924	13,375	647,012	112	3,272,643	1950
1951	42	70,317	1,226,582	466,334	262,393	636	2,028,262	59	362,554	333,091	227,632	72,762	71,648	1,067,687	13	339,592	75	25,521	8,003	15,328	388,519	114	3,484,468	1951
1952	40	74,510	593,422	527,960	122,277	2,756	1,320,925	48	377,094	577,407	399,864	67,117	34,935	1,456,417	21	729,560	1,339	38,836	7,692	19,359	796,786	109	3,574,128	1952
1953	35	120,971	355,580	418,260	90,489	1,571	986,871	40	330,933	604,281	333,390	36,730	33,160	1,338,494	19	530,186	1,108	45,398	2,703	20,810	600,205	94	2,925,570	1953
1954	27	113,130	519,364	601,800	87,996	2,642	1,324,932	39	299,325	621,214	381,536	77,041	28,257	1,407,373	12	393,201	9,835	42,890	6,228	22,695	474,849	78	3,207,154	1954
1955	26	55,561	547,765	177,690	64,814	1,157	846,987	44	233,290	722,448	162,999	47,294	22,078	1,188,109	12	372,756	90	22,968	2,476	24,583	422,873	79	2,457,969	1955
1956	23	80,855	565,076	267,934	44,030	2,082	959,977	44	357,242	547,775	375,417	47,525	22,082	1,350,041	11	577,461	3,198	31,683	4,385	22,889	640,336	78	2,950,354	1956
1957	23	82,276	404,581	362,979	53,567	1,567	904,970	36	188,682	309,193	435,750	29,275	17,114	980,014	13	492,072	...	31,087	4,448	29,303	556,910	72	2,441,894	1957
1958	21	79,508	674,697	348,832	50,277	983	1,154,297	39	131,071	811,141	361,403	40,261	9,649	1,353,525	17	277,775	61,813	44,571	11,453	41,146	436,758	71	2,944,580	1958
1959	17	61,702	472,684	162,948	60,013	1,374	758,721	27	161,251	162,229	203,000	35,185	11,736	573,410	9	361,550	32	49,378	3,091	32,157	446,208	53	1,778,339	1959
1960	32	43,589	137,221	105,636	17,233	864	304,543	41	243,390	531,163	361,567	54,064	10,126	1,200,310	35	889,655	12,604	106,856	2,480	33,097	1,044,692	108	2,571,156	
1961	25	64,770	834,114	276,623	46,051	441	1,221,999	35	276,150	497,203	189,033	32,045	13,905	1,008,336	31	964,222	782	62,801	4,116	37,495	1,069,416	91	3,299,751	
Ave.	28	78,242	549,697	344,037	85,309	1,563	1,058,848	41	268,483	521,994	324,256	50,725	26,079	1,191,537	16	496,380	9,009	43,919	5,296	26,137	580,741	85	2,831,126	Ave.

NOTE: Average is for the ten years preceding the current year. Figures for years prior to 1952, and those for 1956 and 1959 are revised from official U. S. data; those for 1961 are from PACIFIC FISHERMAN'S own compilation; both are limited to fish canned in Alaska, and do not include Alaska fish canned on Puget Sound. The latter are included in figures from 1952 through 1955, which are from PACIFIC FISHERMAN'S own data.

Data for 1960 are from U. S. Bureau of Commercial Fisheries sources, but as segregated vary slightly from official statistical totals for Alaska as a whole, as used elsewhere in this volume for 1960 totals.

QUALITY OUR FIRST CONSIDERATION

FIDALGO ISLAND PACKING CO.

2360 Commodore Way
SEATTLE 99, WASH.

PACKERS & DISTRIBUTORS
ALL GRADES

Alaska & Puget Sound

SALMON

Selling Agents
H. Bell-Irving & Co. Limited
Vancouver, B. C.

QUALITY OUR FIRST CONSIDERATION

CHIGNIK FISHERIES COMPANY

1826 Exchange Building
SEATTLE 4, WASHINGTON

Packers of

ALASKA CANNED SALMON

CANNERY: Chignik, Alaska

RECAPITULATION OF ALASKA CANNED SALMON PACK - 1961

DISTRICT	RED or SOCKEYE			PINK			CHUM			MEDIUM RED or COHO			KING or CHINOOK			GRAND TOTAL (CASES)
	1-lb & 4-lb 48-lb net	1/2-lb & 1/4-lb 48-lb net	Total	1-lb & 4-lb 48-lb net	1/2-lb, 1/4-lb 48-lb net	Total	1-lb & 4-lb 48-lb net	1/2-lb, 1/4-lb 48-lb net	Total	1-lb & 4-lb 48-lb net	1/2-lb & 1/4-lb 48-lb net	Total	1-lb & 4-lb 48-lb net	1/2-lb & 1/4-lb 48-lb net	Total	
Western Alaska	831,023	133,199	964,222	782	---	782	62,801	---	62,801	4,116	---	4,116	11,929	25,566	37,495	1,069,416
Central Alaska	151,555	124,595	276,150	467,203	30,000	497,203	178,318	10,715	189,033	29,589	2,456	32,045	1,926	11,979	13,905	1,008,336
Southeast Alaska	41,168	23,602	64,770	787,390	46,724	834,114	258,519	18,104	276,623	36,337	9,714	46,051	441	---	441	1,221,999
TOTAL ALASKA	1,023,746	281,396	1,305,142	1,255,375	76,724	1,332,099	499,638	28,819	528,457	70,042	12,170	82,212	14,296	37,545	51,841	3,299,751

1961 - CENTRAL ALASKA CANNED SALMON PACK

COMPANY	CANNERY LOCATION	RED or SOCKEYE			PINK			CHUM			COHO			KING or CHINOOK			GRAND TOTAL (full cs.)
		1 & 4 lb. Talls & Flats	1/2-lb. Flats (8 doz.)	TOTAL	1 & 4 lb. Talls & Flats	1/2-lb. Flats (8 doz.)	TOTAL	1 & 4 lb. Talls & Flats	1/2-lb. Flats (8 doz.)	TOTAL	1 & 4 lb. Talls & Flats	1/2-lb. Flats (8 doz.)	TOTAL	1 & 4 lb. Talls & Flats	1/2-lb. Flats (8 doz.)	TOTAL	
Alaska Packers Ass'n.	Chignik	5,296	9,135	14,431	12,756	---	12,756	7,289	---	7,289	72	---	72	6	---	6	34,554
	Cordova	260	15,240	15,500	22,510	37	22,547	1,750	23	1,773	6,757	12	6,769	---	613	613	47,202
	Kodiak	1,088	9,424	10,512	47,459	---	47,459	9,683	---	9,683	402	---	402	127	---	127	68,183
Artic Maid Fisheries	Kodiak	---	---	---	---	---	---	---	---	---	484	---	484	---	---	---	484
Alaska Year-Round Canneries	Seldovia	3,324	227	3,551	3,077	243	3,320	1,672	59	1,731	---	---	---	2	1	3	8,605
Bering Sea Fisheries Inc.	Valdez	---	---	---	3,982	791	4,773	---	---	---	---	---	---	---	---	---	4,773
Berman Packing Co.	Ninilchik	3,599	747	4,346	107	---	107	159	56	215	96	130	226	105	60	165	5,059
Chignik Fisheries Co.	Chignik	5,185	9,073	14,258	12,716	---	12,716	7,239	---	7,239	53	---	53	7	---	7	34,273
Columbia Wards Fisheries	Kodiak Island	4,948	85	5,033	23,476	468	23,944	2,187	21	2,208	63	1	64	---	---	---	31,249
	Kenai	15,909	5,818	21,727	267	7	274	4,243	1,494	5,737	393	533	926	467	264	731	29,395
Cook Inlet Pkg. Co.	Seldovia	3,324	227	3,551	3,077	243	3,320	1,672	59	1,731	---	---	---	2	1	3	8,605
Copper River Co-op Co. Inc.	Cordova	---	7,225	7,225	---	6,327	6,327	---	2,189	2,189	---	96	96	---	150	150	15,987
Crystal Falls Fish Co.	Crystal Falls	1,475	319	1,794	---	---	---	---	---	---	350	508	858	---	32	32	2,684
Emard Packing Co. Inc.	Anchorage	4,252	1,977	6,229	2,101	43	2,144	7,805	47	7,852	3,613	493	4,106	1,011	9,278	10,289	30,620
Fidalgo Island Pkg. Co.	Seldovia	6,652	554	7,206	6,151	485	6,636	3,574	117	3,691	246	---	246	---	---	---	17,779
P.E. Harris Co. Inc.	King Cove	918	---	918	435	---	435	2,624	---	2,624	127	---	127	8	---	8	4,112
	False Pass	22,978	20,862	43,840	20,872	9,273	30,145	25,275	3,602	28,877	152	137	289	60	41	101	103,252
Intercoastal Pkg. Co.	Uganik Bay	1,023	23	1,046	15,197	322	15,519	2,768	31	2,799	105	2	107	---	---	---	19,471
Kadiak Fisheries Co.	Central Alaska	4,546	67	4,613	48,322	1,025	49,347	11,614	130	11,744	704	12	716	24	---	24	66,444
Kayak Packing Co.	Sand Point	---	---	---	4,132	---	4,132	2,036	---	2,036	---	---	---	---	---	---	6,168
King Crab, Inc.	Kodiak	2	255	257	7,578	1,965	9,543	1,808	770	2,578	14	243	257	---	---	---	12,635
New England Fish Co.	Central Alaska	6,920	13,153	20,073	39,009	2,485	41,494	14,005	993	14,998	4,218	7	4,225	14	520	534	81,324
Ouzinkie Pkg. Corp.	Kodiak Island	1,905	66	1,971	12,945	272	13,217	3,762	42	3,804	234	5	239	22	---	22	19,253
Pacific American Fisheries	Central Alaska	19,662	11,337	30,999	90,665	2,665	93,330	37,631	33	37,664	759	2	761	48	---	48	162,802
Parks Canning Co.	Uyak Bay	764	11	775	12,623	265	12,888	7,897	80	7,977	52	1	53	5	---	5	21,698
San Juan Fishing & Pkg. Co.	Port San Juan	6	---	6	6,294	---	6,294	899	---	899	33	---	33	---	---	---	7,232
	Uganik Bay	1,740	38	1,778	25,875	549	26,424	4,713	53	4,766	179	4	183	---	---	---	33,151
Snug Harbor Pkg. Co.	Snug Harbor	7,494	---	7,494	136	---	136	3,898	---	3,898	1,467	---	1,467	18	---	18	13,013
Tidewater Pkg. Co.	Anchorage	---	196	196	---	13	13	---	45	45	---	202	202	---	209	209	665
Uganik Trading Co.	West Point	---	105	105	---	35	35	---	25	25	---	---	---	---	---	---	165
Washington Fish & Oyster Co.	Kodiak Island	256	6	262	8,806	393	9,199	6,355	343	6,698	175	3	178	---	---	---	16,337
	Cordova	6	---	6	3,300	---	3,300	96	---	96	1,924	---	1,924	---	---	---	5,326
West Point Canning Co.	Uganik Bay	---	1,233	1,233	---	1,421	1,421	---	296	296	---	21	21	---	---	---	2,971
Western Fisheries Co.	Cordova	1,832	16,638	18,470	27,186	187	27,373	2,148	91	2,239	6,670	44	6,714	---	810	810	55,606
Whitney & Co.	Central Alaska	6,651	554	7,205	6,149	486	6,635	3,516	116	3,632	247	---	247	---	---	---	17,719
Miscellaneous		19,540	---	19,540	---	----	---	---	---	---	---	---	---	---	---	---	19,540
TOTAL		151,555	124,595	276,150	467,203	30,000	497,203	178,318	10,715	189,033	29,589	2,456	32,045	1,926	11,979	13,905	1,008,336

SALMON

U.S.S.R. Pacific Salmon Catch by Areas — 1961

(Stated in Metric Tons of 2,200 lbs.)

Area	Red	Chum	Pink	Silver	King	TOTAL
East Kamchatka	1,020	4,397	13,658	2,349	582	22,009
West Kamchatka	6,773	2,943	4,432	2,107	70	16,326
Sakhalin-Kurile	---	1,445	7,184	---	---	8,629
North Okhotsk	---	1,984	3,451	30	---	5,466
Okhotsk	40	13,053	718	32	---	13,845
Amur River	---	12,628	227	---	---	12,855
Maritime Prov.	---	---	606	---	---	606
TOTAL	7,833	36,452	30,277	4,519	654	79,736

NORTH AMERICAN CANNED SALMON PACK

Year	Red, Sockeye or Blueback	Pink	Chum or Keta	Medium Red Coho or Silverside	King or Chinook	Steelhead Trout	Total Cases	Year
1898	1,594,162	109,399	51,530	282,589	398,564	26,277	2,462,521	1898
1899	2,153,388	401,892	61,932	261,071	334,974	11,994	3,225,251	1899
1900	2,046,908	232,022	155,208	208,026	338,493	20,597	3,001,254	1900
1901	3,801,730	585,017	86,230	126,535	455,395	20,000	5,074,907	1901
1902	2,702,045	549,602	313,603	227,031	379,641	8,593	4,180,515	1902
1903	2,231,555	564,507	61,232	330,319	403,836	7,251	3,598,700	1903
1904	1,950,949	299,333	168,235	168,235	444,472	9,868	3,041,092	1904
1905	3,488,322	253,559	138,642	269,806	443,794	9,822	4,603,945	1905
1906	2,122,204	416,602	450,151	397,346	424,974	6,500	3,817,777	1906
1907	1,707,813	1,114,100	272,135	397,786	354,209	6,604	3,852,647	1907
1908	2,186,325	726,656	303,837	386,745	379,171	11,863	3,994,597	1908
1909	3,671,555	882,410	218,987	373,567	262,554	17,382	5,426,455	1909
1910	2,274,780	589,043	555,908	521,966	372,901	5,576	4,320,174	1910
1911	1,869,927	2,373,595	592,790	676,141	627,714	8,618	6,104,887	1911
1912	2,544,435	1,556,128	808,630	621,817	426,338	7,198	5,956,953	1912
1913	4,643,425	2,392,166	432,812	300,033	285,472	9,539	8,063,447	1913
1914	3,121,964	1,222,013	1,200,433	579,980	509,100	11,292	6,644,782	1914
1915	2,492,865	2,825,570	1,107,707	551,821	641,979	29,650	7,639,592	1915
1916	2,432,048	2,036,077	1,500,332	715,815	646,341	24,999	7,355,612	1916
1917	3,248,843	3,929,332	1,648,313	588,749	673,980	35,677	10,124,894	1917
1918	2,987,710	2,953,245	2,175,031	838,088	697,140	41,086	9,692,300	1918
1919	1,707,846	2,426,414	2,367,481	793,175	704,195	24,392	8,023,503	1919
1920	1,892,691	2,138,959	1,175,001	361,566	705,050	16,054	6,289,321	1920
1921	2,034,310	1,038,090	359,947	362,943	419,508	11,362	4,226,160	1921
1922	2,480,811	2,241,760	908,283	510,919	353,588	26,640	6,522,001	1922
1923	2,309,142	3,371,917	1,120,591	534,225	389,802	27,757	7,753,434	1923
1924	1,902,832	3,295,739	1,835,251	542,682	406,096	31,270	7,990,543	1924
1925	1,581,792	3,111,320	1,803,371	667,817	550,071	17,248	7,731,610	1925
1926	2,550,771	4,101,422	1,762,134	607,778	485,783	86,233	9,544,126	1926
1927	1,738,054	2,241,304	1,217,338	642,522	538,574	33,377	6,411,169	1927
1928	2,214,498	3,583,433	2,165,652	602,203	354,798	17,492	8,938,076	1928
1929	2,100,787	3,775,764	1,541,213	564,826	375,497	24,821	8,382,908	1929
1930	1,710,018	4,266,301	1,085,351	758,451	427,282	18,509	8,265,912	1930
1931	2,084,385	3,890,755	671,574	388,140	418,483	13,679	7,467,016	1931
1932	2,484,459	2,341,966	1,313,537	446,706	394,830	14,386	6,995,884	1932
1933	2,579,891	3,259,341	1,021,547	402,107	343,442	19,486	7,625,814	1933
1934	3,354,863	4,261,262	1,362,905	596,951	352,752	16,183	9,944,916	1934
1935	1,232,852	4,139,114	1,303,216	596,117	279,693	15,484	7,566,476	1935
1936	2,968,184	5,181,954	1,846,675	533,285	313,795	20,350	10,864,243	1936
1937	2,494,302	4,532,487	1,233,999	369,916	385,986	18,412	9,035,372	1937
1938	3,125,176	3,623,435	1,387,245	595,380	234,520	16,283	8,982,039	1938
1939	2,280,088	3,412,392	1,054,858	472,239	254,930	26,090	7,500,597	1939
1940	1,402,999	3,124,292	1,553,389	592,395	286,485	34,443	6,994,003	1940
1941	1,763,852	5,218,427	1,770,225	831,279	422,989	36,597	10,043,369	1941
1942	1,860,044	3,088,724	1,723,193	616,687	343,369	26,507	7,658,524	1942
1943	2,169,091	2,913,760	1,258,239	377,160	196,000	19,357	6,933,608	1943
1944	1,869,365	2,478,750	1,239,548	383,040	223,088	23,143	6,216,934	1944
1945	1,556,200	3,374,192	1,041,387	457,680	194,056	22,125	6,645,640	1945
1946	1,893,469	2,176,817	1,267,478	316,968	230,811	21,880	5,907,423	1946
1947	2,197,569	2,962,281	1,127,496	438,087	366,620	25,325	7,117,378	1947
1948	1,994,733	1,630,411	1,551,190	577,726	354,475	26,027	6,134,562	1948
1949	1,335,248	3,946,309	946,615	492,871	229,031	11,305	6,961,380	1949
1950	1,698,290	1,544,327	1,816,745	468,768	215,114	13,777	5,757,022	1950
1951	1,364,419	2,737,445	1,443,330	779,725	258,530	18,517	6,601,966	1951
1952	1,862,844	1,850,890	1,375,214	461,629	168,150	22,763	5,741,490	1952
1953	1,672,714	2,189,770	1,359,134	317,314	170,614	22,369	5,731,915	1953
1954	2,004,548	1,486,676	1,910,330	343,203	144,013	17,113	5,905,883	1954
1955	994,186	2,505,415	591,190	394,529	194,414	15,327	4,695,061	1955
1956	1,502,650	1,492,979	961,769	406,486	177,628	9,425	4,550,937	1956
1957	1,192,018	1,695,172	1,164,082	421,468	152,547	8,730	4,634,017	1957
1958	2,028,120	2,005,543	1,141,108	283,102	147,900	7,526	5,613,299	1958
1959	993,056	1,278,421	715,224	403,666	141,505	10,763	3,542,635	1959
1960	1,524,830	954,340	765,242	186,064	106,012	6,678	3,543,166	1960
1961	1,842,811	2,059,418	676,124	381,341	118,098	8,334	5,086,126	1961
10 Yr. Average	1,513,938	1,819,665	1,142,662	399,719	166,131	13,921	5,056,036	10 Yr. Average

NOTE: Figures represent full cases of 48 lbs. net. "Average" is for the ten years preceding the current year.

Figures for the last year shown are from PACIFIC FISHERMAN's compilation; those for previous years are official totals.

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BUMBLE BEE BRAND FANCY KING CRAB MEAT
BUMBLE BEE BRAND Fancy SOLID WHITE TUNA
BUMBLE BEE BRAND Fancy KING CRAB MEAT
BUMBLE BEE BRAND COHOE SALMON STEAK
BUMBLE BEE BRAND CHUNK LIGHT TUNA
BUMBLE BEE BRAND CHUNK WHITE TUNA
BUMBLE BEE BRAND FANCY COLUMBIA RIVER SALMON
BUMBLE BEE BRAND CHUNK LIGHT TUNA
BUMBLE BEE BRAND FANCY PUGET SOUND SOCKEYE SALMON
BUMBLE BEE BRAND PINK SALMON
BUMBLE BEE BRAND PINK SALMON
BUMBLE BEE BRAND CHUNK WHITE TUNA
BUMBLE BEE BRAND SOLID LIGHT TUNA
BUMBLE BEE BRAND ALASKA SOCKEYE RED SALMON
BUMBLE BEE BRAND FANCY BLUEBACK SALMON
BUMBLE BEE BRAND COLUMBIA RIVER FANCY CHINOOK SALMON
BUMBLE BEE BRAND COHOE SALMON STEAK
BUMBLE BEE BRAND ALASKA SOCKEYE RED SALMON
BUMBLE BEE BRAND FANCY BLUEBACK SALMON
BUMBLE BEE FANCY COLUMBIA RIVER SALMON
BUMBLE BEE BRAND Fancy SHAD ROE

CENTRAL ALASKA CANNED SALMON PACKS

ALASKA PENINSULA, SOUTH SIDE (Cases)						YEAR	CHIGNIK (Cases)					
Reds	Pinks	Chums	Cohoes	Kings	TOTAL		Reds	Pinks	Chums	Cohoes	Kings	TOTAL
97,695	233,438	163,058	17,298	3,008	514,497	1941	59,373	16,373	15,345	2,322	316	93,729
56,886	291,392	117,532	10,437	843	477,090	1942	56,977	22,962	11,853	1,093	378	93,263
177,000	167,024	70,727	6,657	1,934	423,342	1943	110,086	4,265	4,638	1,924	290	121,203
40,585	123,988	82,560	21,108	819	269,060	1944	47,448	29,283	6,221	1,223	442	84,617
58,984	140,319	73,752	9,923	1,765	284,743	1945	18,666	18,381	11,582	638	222	49,489
50,808	89,164	88,544	12,122	688	241,326	1946	70,817	39,544	22,049	695	305	133,410
83,407	115,916	81,921	4,343	456	286,043	1947	146,788	23,640	5,417	512	111	176,468
23,916	66,743	82,494	2,689	151	175,993	1948	33,574	47,393	31,348	79	79	112,473
47,751	70,866	39,863	1,526	723	160,729	1949	54,146	3,976	11,210	512	129	69,973
135,595	88,452	49,703	5,315	803	279,868	1950	31,644	28,737	8,885	1,135	127	70,528
15,344	116,730	43,007	3,440	183	178,704	1951	25,857	18,576	16,135	719	231	61,518
64,685	38,317	110,249	4,106	182	217,539	1952	14,852	23,113	49,359	94	20	87,438
142,477	131,958	138,117	3,364	624	416,540	1953	37,758	32,186	46,738	88	127	116,897
45,719	64,847	112,598	2,155	561	225,880	1954	11,078	29,000	38,046	93	45	78,262
45,318	76,639	54,263	1,638	541	178,399	1955	31,070	29,484	25,753	2	114	86,423
72,518	72,237	136,678	2,498	659	284,590	1956	64,071	21,149	30,934	698	40	116,892
22,676	30,168	117,452	2,301	653	173,250	1957	28,248	14,529	21,746	422	137	65,082
18,061	76,469	94,930	6,279	176	195,914	1958	26,424	18,884	31,871	94	81	77,354
23,549	45,595	78,946	983	245	149,318	1959	29,831	3,659	20,746	33	44	54,313
64,234	72,284	118,012	797	841	256,168	1960	53,262	15,852	36,759	631	37	106,541
69,735	89,937	69,922	120	162	229,896	1961	28,515	25,432	14,480	106	13	68,546
51,458	72,524	100,425	2,756	466	227,630	Aver.	32,245	20,643	31,809	287	88	85,072

KODIAK AREA (Cases)						YEAR	COOK INLET (Cases)					
Reds	Pinks	Chums	Cohoes	Kings	TOTAL		Reds	Pinks	Chums	Cohoes	Kings	TOTAL
121,725	508,306	57,368	22,854	638	710,891	1941	90,885	38,235	24,706	31,105	27,448	212,379
83,340	313,711	76,563	10,751	363	484,728	1942	98,418	55,722	40,110	61,734	28,617	284,604
129,105	555,209	41,766	5,682	308	730,070	1943	102,746	60,540	26,292	23,447	30,963	243,988
142,212	335,683	56,035	5,623	183	539,736	1944	156,799	96,694	23,311	25,442	25,668	327,914
154,513	491,346	64,957	5,640	521	716,977	1945	118,849	54,370	28,302	281718	22,420	252,659
65,810	541,334	37,817	3,982	34	648,977	1946	105,065	60,101	31,593	35,835	17,191	249,785
85,805	494,211	23,133	6,752	27	609,928	1947	106,180	30,073	21,183	34,430	30,718	222,584
98,030	303,564	93,918	4,046	189	499,747	1948	133,828	75,678	38,086	29,462	32,688	309,742
69,861	208,537	63,632	5,055	803	347,888	1949	165,588	19,139	21,844	26,783	31,234	264,588
64,463	266,694	73,846	5,786	408	411,197	1950	207,032	62,528	52,572	63,565	34,247	419,944
81,117	126,238	89,926	8,842	5,996	312,119	1951	171,030	24,296	21,884	27,707	59,973	304,890
89,888	281,405	141,730	4,678	1,963	519,664	1952	94,951	115,666	30,095	20,252	22,931	283,895
47,451	273,344	68,239	5,143	328	394,505	1953	101,206	27,208	41,457	18,880	28,952	217,703
34,643	382,779	141,682	6,597	682	566,383	1954	105,571	133,864	85,083	33,318	23,995	381,831
17,923	525,322	54,290	3,059	78	600,672	1955	79,006	62,454	29,450	13,698	15,034	199,642
29,461	156,127	62,970	4,990	157	253,705	1956	110,186	80,081	85,172	16,918	16,995	309,352
15,643	232,975	96,680	3,885	63	349,246	1957	58,102	18,709	122,146	9,713	12,549	221,219
18,803	254,320	91,704	3,304	95	368,226	1958	38,362	171,946	63,126	20,693	6,601	300,728
23,300	110,509	65,897	2,643	274	202,623	1959	43,466	5,919	35,244	8,855	7,057	100,541
27,924	281,122	100,076	5,102	161	414,385	1960	65,654	91,320	67,001	24,944	6,936	255,855
32,516	258,767	57,811	2,800	144	352,038	1961	97,968	41,359	36,939	9,918	5,135	191,319
38,615	262,414	91,319	4,824	980	398,153	Aver.	86,753	73,146	58,066	19,498	20,102	257,566

PRINCE WILLIAM SOUND and RESURRECTION BAY (Cases)						YEAR	COPPER and BERING RIVER AREA (Cases)				REGIONAL GRAND TOTAL
Reds	Pinks	Chums	Cohoes	Kings	TOTAL		Reds	Cohoes	Kings	TOTAL	
7,083	217,007	73,776	6,430	100	304,396	1941	36,868	83,142	3,067	123,077	1,958,969
13,289	366,965	82,633	13,703	449	477,039	1942	47,849	84,322	5,262	137,433	1,954,157
9,285	511,818	30,620	8,237	2,595	562,555	1943	57,418	21,837	4,893	84,148	2,165,306
12,741	416,848	118,159	7,902	158	555,808	1944	62,780	34,949	2,517	100,246	1,877,381
17,382	493,482	154,080	4,941	102	669,987	1945	70,744	41,103	6,037	117,884	2,091,739
10,432	317,329	76,003	16,037	408	420,209	1946	45,645	25,821	7,145	78,611	1,772,318
17,995	380,017	65,018	7,270	180	470,440	1947	30,717	22,231	3,596	56,544	1,822,077
19,115	123,411	47,008	5,048.	74	194,656	1948	13,536	28,405	1,237	43,180	1,335,791
8,423	275,830	83,195	13,016	167	380,631	1949	46,404	15,986	1,964	64,354	1,288,163
7,179	111,838	57,464	12,441	88	189,010	1950	70,592	18,997	4,517	94,106	1,464,654
66,871	47,249	56,680	30,535	5,195	206,550	1951	39,963	24,513	3,737	68,213	1,131,994
107,471	118,905	68,430	37,987	9,231	342,024	1952	103,533	1,605	9,337	114,475	1,565,035
5,355	124,122	34,929	4,454	37	168,897	1953	51,136	3,884	3,163	58,183	1,372,725
1,688	1,240	1,670	603	---	5,201	1954	102,850	33,035	4,336	140,221	1,397,778
1,864	5,941	1,602	663	---	10,070	1955	56,071	27,610	5,840	89,521	1,164,727
15,771	186,537	49,334	3,678	31	255,351	1956	49,023	20,242	3,330	72,595	1,292,485
6,323	35,431	74,706	1,891	171	118,522	1957	48,994	10,198	2,149	61,341	988,660
1,001	296,140	75,408	529	2	373,080	1958	28,328	9,285	2,219	39,742	1,355,044
---	---	---	----	---	---	1959	25,145	22,045	2,980	50,170	556,965
2,701	70,554	39,711	1,267	2	114,235	1960	29,615	21,362	2,149	53,126	1,200,310
6,718	79,167	9,462	194	---	95,541	1961	48,764	20,063	2,169	70,996	1,008,336
20,905	88,612	40,247	8,163	1,467	159,393	Aver.	53,466	17,378	3,924	74,759	1,202,572

NOTE: Figures are based on Alaska Department of Fish and Game and U. S. Fish & Wildlife Service final data, which DO NOT include fish caught in these areas and canned elsewhere, and accordingly are somewhat different from those in other tables compiled independently by PACIFIC FISHERMAN. Figures for the latest year shown are preliminary "Average" figures are for the ten years preceding the current year.

1961-PACIFIC CANNED SALMON PACK

(Figures reduced to uniform basis of 48-lb. cases.)

Species	Alaska	Puget Sound	Columbia River	Coastal Areas	Total U.S.	British Columbia	GRAND TOTAL
Red or Sockeye	1,305,142	134,940	3,289	1,137	1,444,508	398,303	1,842,811
Pink	1,332,099	66,216	---	---	1,398,315	661,103	2,059,418
Chum or Keta	528,457	49,062	2,750	468	580,737	95,387	676,124
Coho or Silver	82,212	33,951	24,444	---	140,607	240,734	381,341
Chinook or King	51,841	1,755	57,014	---	110,610	7,488	118,098
Steelhead	---	---	7,355	---	7,355	979	8,334
TOTAL	3,299,751	285,924	94,852	1,605	3,682,132	1,403,994	5,086,126

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RED TALLS
SOCKEYE HALVES
PINK TALLS
PINK HALVES

COHOE TALLS
CHUM TALLS & HALVES
RED & COHO QUARTERS

EAT
MORE
ALASKA
RED
DELICACY

Four Pound Salmon All Species

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In addition to its products for consumer use, the Company manufactures many important industrial materials from marine resources—fish meal, fish oil, condensed fish solubles, whale and sperm oil, whalemeat meal, liver oil and sundry other products used by industry.

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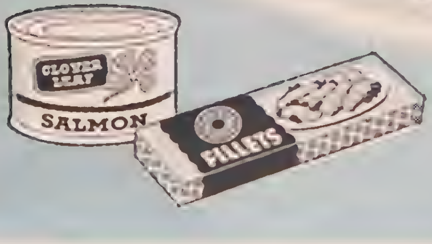

BRITISH COLUMBIA PACKERS LIMITED
Vancouver, B.C., Canada

889J-1

SALMON
British Columbia

A "Good Average"

• Salmon operations in 1961 enjoyed a good average year in British Columbia, but the season was not without its disappointments.

It ended with a total salmon pack of more than 1,400,000 cases, a figure close to the 10-year average. The pack was, of course, beyond comparison with 1960's dismal showing, which was one of the worst in the industry's annals.

Sockeye pack was less than half that of bountiful 1958, when the Adams River run was making history, but it gave the industry plenty to work on. However, after the almost spectacular showing early in the season in the northern areas, the Sockeye run trailed off in the south to an extent that caused some frustration among scientists as well as fishermen and packers.

Such a sudden decline in sea survival within a single season was without precedent and it made biologists and regulating agencies increasingly conscious of this unpredictable factor. Ocean survival, according to all the evidence available at this time, will adversely affect the 1962 production in a season which, because of the incidence of the Adams River run, would normally be of impressive proportions.

• From the standpoint of fishermen and operators, 1961 was marred by the frequency and severity of restrictions on fishing dictated by determination to insure adequate escapement of spawners. Apart from the enforced curtailment of production, the restrictions added to the cost of operations by crowding the fishing effort into unusually brief periods.

One of the idiosyncrasies of the season which for a time threatened disaster occurred on the Horsefly River, important spawning grounds in the Fraser system. Temperature of the water there rose so high that spawning Sockeyes were considered in danger of near-extinction. More than 60% of the spawners were lost before melting snows on the higher elevations surrounding the river led to cooler temperatures.

Examination of the dead salmon indicated erosion of the gills due to an infection induced by the warm water,

1961 - BRITISH COLUMBIA CANNED SALMON PACK - 1961

	# Canneries	(Cases)							
		Sockeye	Springs	Steelheads	Bluebacks	Coho	Pinks	Chums	TOTAL
District No. 1 (FRASER RIVER & HOWE SOUND) Anglo-B.C. Packing Co., Ltd. - "Phoenix" British Columbia Packers, Ltd. - "Imperial" Canadian Fishing Co., Ltd. - "Home" Carlyle Packing Co. Johnston Fishing & Packing Co., Ltd. - "Glen Rose" Francis Millerd & Co., Ltd. - "Great Northern" Nelson Bros. Fisheries, Ltd. (Colonial) North American Fisheries Queen Charlotte Fisheries, Ltd. - "Bidwell' John Safarik & Sons Seafood Products, Ltd. Tulloch Western Fisheries, Ltd. District No. 2A (SKEENA & NAAS AREAS) Anglo-B.C. Packing Co., Ltd. - "North Pacific" British Columbia Packers, Ltd. - "Sunnyside" Canadian Fishing Co. - "Oceanside" Cassiar Packing Co., Ltd. - "Cassiar" Nelson Bros. Fisheries, Ltd. - "Port Edward" Babcock Fisheries, Prince Rupert Royal Fisheries, Prince Rupert District No. 2B (CENTRAL AREAS, etc.) British Columbia Packers, Ltd. - "Namu" J. H. Todd & Sons - Klemtu District No. 2C (QUEEN CHARLOTTE IS.) Queen Charlotte Canners District No. 3 (VANCOUVER ISLAND) Oakland Industries, Victoria Port Alberni Fish Co. - Port Alberni	24	398,303	7,488	979	12.521	228,213	661,103	95,387	1,403,994

NOTE: Figures are preliminary statistics of the Canadian Fisheries Department and are subject to later correction. Publication of statistics for the pack by districts in British Columbia has been discontinued, because present operating practice, in which fish from one district may be canned in another tends to confuse and impair information based on quantities canned within specific areas. Figures are for full cases of 48 one-pound cans or equivalent.

BRITISH COLUMBIA CANNED SALMON PACK

(CASES)

YEAR	Sockeyes Fraser River	Sockeyes Other Districts	Total Sockeyes	Springs	Cohoes & Bluebacks	Steelheads	Pinks	Chums	TOTAL Cases	YEAR
1903	204,809	163,908	368,717	25,657	51,918	...	27,382	...	473,674	1903
1904	72,688	250,536	323,226	38,675	66,351	...	...	37,642	465,894	1904
1905	837,489	243,184	1,080,673	28,359	44,458	...	13,970	...	1,167,460	1905
1906	183,007	276,672	459,679	32,344	69,132	...	68,035	...	629,460	1906
1907	59,815	254,259	314,074	26,098	87,900	683	118,704	...	547,459	1907
1908	63,126	291,897	355,023	28,164	81,917	1,137	76,448	...	542,689	1908
1909	542,248	298,193	840,441	19,017	61,918	...	46,544	...	967,920	1909
1910	133,045	432,870	565,915	28,789	74,382	140	34,613	58,362	762,201	1910
1911	58,487	325,022	383,509	48,456	119,702	100	305,247	91,951	948,965	1911
1912	108,784	335,778	444,762	80,437	165,102	207	247,743	58,325	996,576	1912
1913	684,596	287,582	972,178	41,049	69,822	...	192,887	77,965	1,353,901	1913
1914	185,483	351,213	536,696	49,328	120,201	...	220,340	184,474	1,111,039	1914
1915	89,040	387,002	476,042	58,104	146,956	2,927	367,352	82,000	1,133,381	1915
1916	27,394	187,395	214,789	66,726	183,623	9,982	280,644	240,201	995,065	1916
1917	123,614	116,234	339,848	76,276	157,589	11,740	496,749	475,273	1,497,475	1917
1918	16,849	259,610	276,459	107,354	191,068	15,916	527,745	497,615	1,616,157	1918
1919	29,628	339,817	369,445	100,551	199,993	4,493	346,639	372,035	1,393,156	1919
1920	44,598	306,807	351,405	118,301	120,033	2,395	520,856	84,626	1,187,616	1920
1921	35,900	128,014	163,914	49,752	124,348	1,220	192,906	71,408	603,548	1921
1922	48,744	250,870	299,614	39,596	109,276	1,657	581,979	258,204	1,290,326	1922
1923	29,423	305,224	334,647	27,142	119,141	1,760	440,932	418,055	1,341,677	1923
1924	36,200	333,403	369,603	27,456	119,989	1,811	657,538	568,916	1,745,313	1924
1925	31,523	361,120	392,643	73,499	199,180	1,996	445,400	607,904	1,720,622	1925
1926	83,589	253,406	336,995	69,189	181,894	2,165	772,993	701,962	2,065,198	1926
1927	57,085	250,947	308,032	58,977	181,968	1,746	247,617	562,109	1,360,449	1927
1928	26,530	177,011	203,541	18,856	156,757	865	792,362	863,256	2,035,637	1928
1929	60,407	220,899	281,306	19,377	196,444	672	477,969	424,982	1,400,750	1929
1930	107,896	369,782	477,678	38,804	190,594	1,656	1,111,937	401,114	2,221,783	1930
1931	54,688	236,776	291,464	27,147	102,175	1,326	206,995	55,997	685,104	1931
1932	83,447	200,908	284,355	76,060	188,971	1,168	223,716	306,761	1,081,031	1932
1933	53,481	204,626	258,107	20,266	159,052	1,459	532,558	293,630	1,265,072	1933
1934	145,579	232,303	377,882	29,784	225,430	1,282	435,364	513,184	1,582,926	1934
1935	76,415	274;029	350,444	21,920	231,492	596	514,966	409,604	1,529,022	1935
1936	165,651	249,373	415,024	29,854	246,061	1,068	591,532	597,487	1,881,026	1936
1937	103,137	222,637	325,774	16,171	133,208	844	585,576	447,602	1,509,175	1937
1938	186,794	260,659	447,453	15,531	301,123	1,035	400,876	541,812	1,707,830	1938
1939	73,216	196,672	269,888	16,103	245,096	797	620,602	386,584	1,539,070	1939
1940	86,215	280,188	366,403	17,741	224,524	1,205	213,911	643,443	1,467,227	1940
1941	149,715	305,582	455,297	50,476	391,407	3,454	427,766	920,470	2,248,870	1941
1942	418,491	248,080	666,571	24,745	211,139	4,649	270,622	633,834	1,811,560	1942
1943	72,507	92,382	164,889	10,658	186,042	3,095	530,188	363,348	1,258,221	1943
1944	107,431	140,283	247,714	19,362	183,546	3,926	389,692	255,316	1,097,557	1944
1945	122,384	205,617	329,001	12,800	218,887	2,922	825,512	350,188	1,739,311	1945
1946	381,580	161,447	543,027	8,100	100,154	4,115	116,607	576,133	1,348,138	1946
1947*	91,238	195,259	286,497	10,017	146,293	3,268	600,787	486,615	1,533,478	1947
1948	83,986	176,656	260,642	16,438	207,116	5,665	321,721	496,553	1,308,137	1948
1949	116,171	143,649	259,821	21,163	215,376	2,374	709,992	227,737	1,436,464	1949
1950	239,333	168,708	408,041	9,133	116,642	3,243	446,516	498,984	1,482,560	1950
1951	260,258	168,041	428,299	13,698	312,845	3,656	736,093	461,806	1,956,397	1951
1952	213,408	235,766	449,174	9,064	64,095	3,752	675,836	91,514	1,293,435	1952
1953	176,097	334,050	510,147	13,048	110,164	3,031	794,764	394,113	1,825,267	1953
1954	486,805	193,913	680,718	14,080	128,080	3,734	335,550	580,574	1,742,736	1954
1955	95,377	149,444	244,821	17,853	185,723	1,590	831,253	124,860	1,406,100	1955
1956	84,296	320,096	320,096	11,671	217,915	1,254	363,633	203,710	1,118,279	1956
1957	101,716	126,736	228,452	10,481	217,915	1,125	751,608	239,539	1,449,120	1957
1958	420,000	659,155	1,079,155	10,475	132,403	1,213	455,518	229,292	1,908,056	1958
1959	123,248	132,922	256,170	15,231	213,106	866	458,596	133,128	1,077,097	1959
1960	97,000	129,844	226,844	5,916	91,504	504	219,564	86,818	631,150	1960
1961	118,000	280,303	398,303	7,488	240,734	979	661,103	95,387	1,403,994	1961
10 Year Average	205,820	236,567	442,387	12,152	167,375	2,073	562,241	254,535	1,440,763	10 Year Aver.

NOTE: Figures for 1925 to 1959 have been corrected from official statistics. Figures for "Fraser River Sockeyes" include all Sockeyes canned in District No. 1, regardless where caught.

Figures for 1961 subject to further correction.
*Figures for 1947 include 28,321 cases packed from frozen fish of 1946 catch of various species.

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British Columbia

a condition that caused the salmon to weaken and die before they had spawned. Actual escapement to the Horsefly last year was better than the brood year by almost 3 to 2, but that improvement was offset by the failure to spawn due to water temperature.

- The Coho pack was one of the bright spots of the season. The Pink catch on the Fraser run was divided about equally between Canada and the U.S., and the escapement was reported to be better to the lower Fraser areas—Seton Creek, Harrison and Vedder—than in the brood year.

The early Sockeye run on the Skeena was much better than expected, exceeding the Skeena Management Committee's estimate by 68%. The Sockeye catch in Rivers Inlet was more than double the 1957 total.

The Pink run in northern B.C. was gratifying, with catches the best in a decade. More than 1,100,000 Pinks were taken in the Bella Coola area, for instance, and the Skeena produced more than 1,500,000 Pinks. Several of the northern streams showed returns ten times higher than for the previous cycle. However, as in the case of Sockeye, the Pink catch declined as operations moved southward. There was a drastic curtailment in Johnstone Strait and the Pink catch in the Fraser was negligible.

The Chum situation was anything but cheerful last year, and the small run was attributed in part to the intensive fishing carried out in 1954 when there were 48 days of operation in the straits and 47 days in the river. January freshets are also suspected of having caused destruction of spawning stocks.

- This year, the use of monofilament salmon gillnets will be banned in British Columbia waters as a conservation measure, although the order may be a temporary one. The Canadian Department of Fisheries intends to make a series of tests to determine whether monofilament is excessively effective as standard gear. If it is approved, the order would presumably be withdrawn.

The definition of the banned type of monofilament is "any single filament having more than 50 denier; that is, weighing more than 50 grams per 9,000 metres of filament.

- Several agencies, notably the Canadian Department of Fisheries, Fisheries Research Board, International Pacific Salmon Fisheries Commission and the Skeena Management Committee, have been active in British Columbia during the past year in a continuing program designed to perpetuate and increase the commercial salmon fishery as an economically important resource.

Among various projects recently undertaken is the Sweltzer Creek research station at Cultus Lake, initiated by the Sockeye commission (IPSFC) and built by the Canadian government at a cost of $110,000.

The station, one of the facilities expected to play an important part in conservation of Fraser River Sockeye and Pink salmon, will provide water having any physical or chemical structure that may be considered desirable in proposed experiments with the salmon. Most of the research will be directed to the measuring of the fundamental requirements for maximum salmon production.

Loyd A. Royal, director of the commission, says that the commission has been concerned about the lack of knowledge related to the fish problems created by pollution, power develop-

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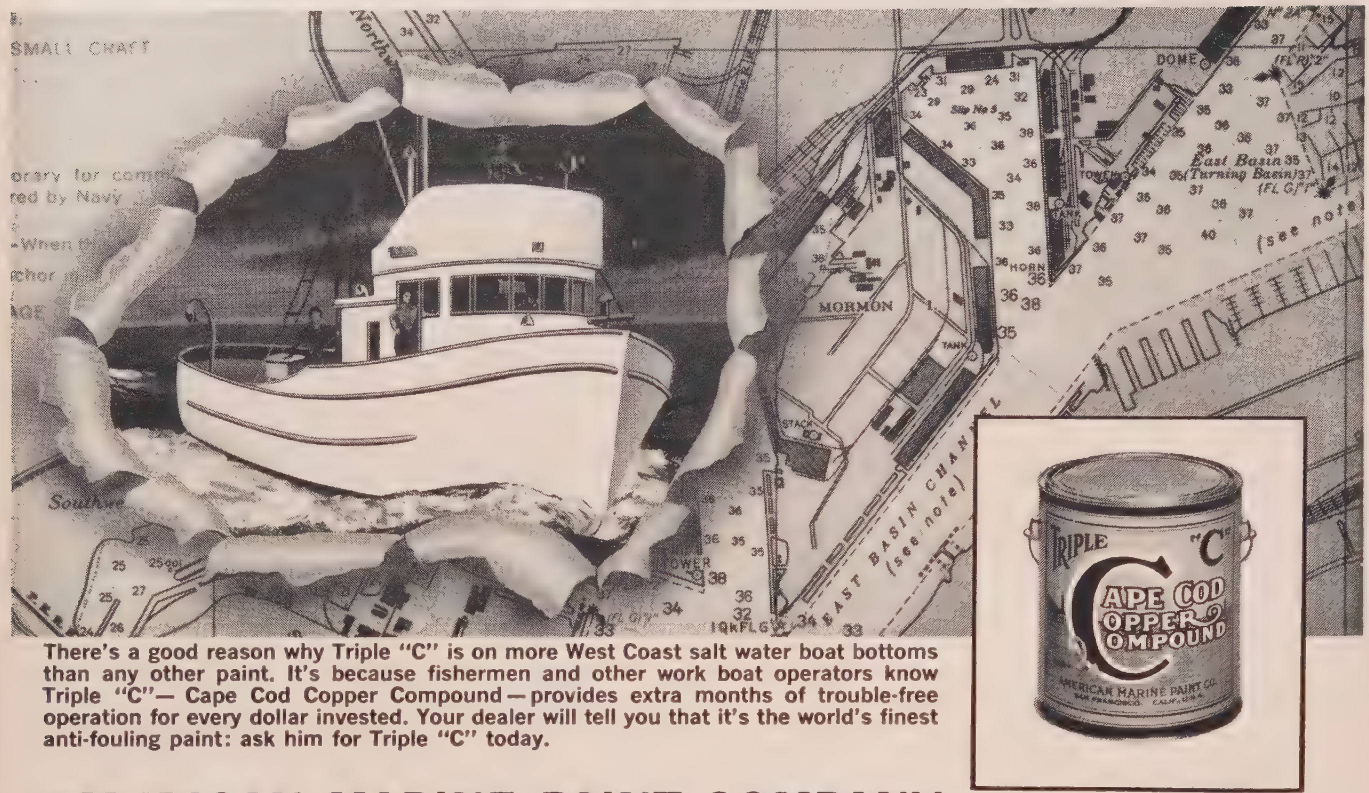
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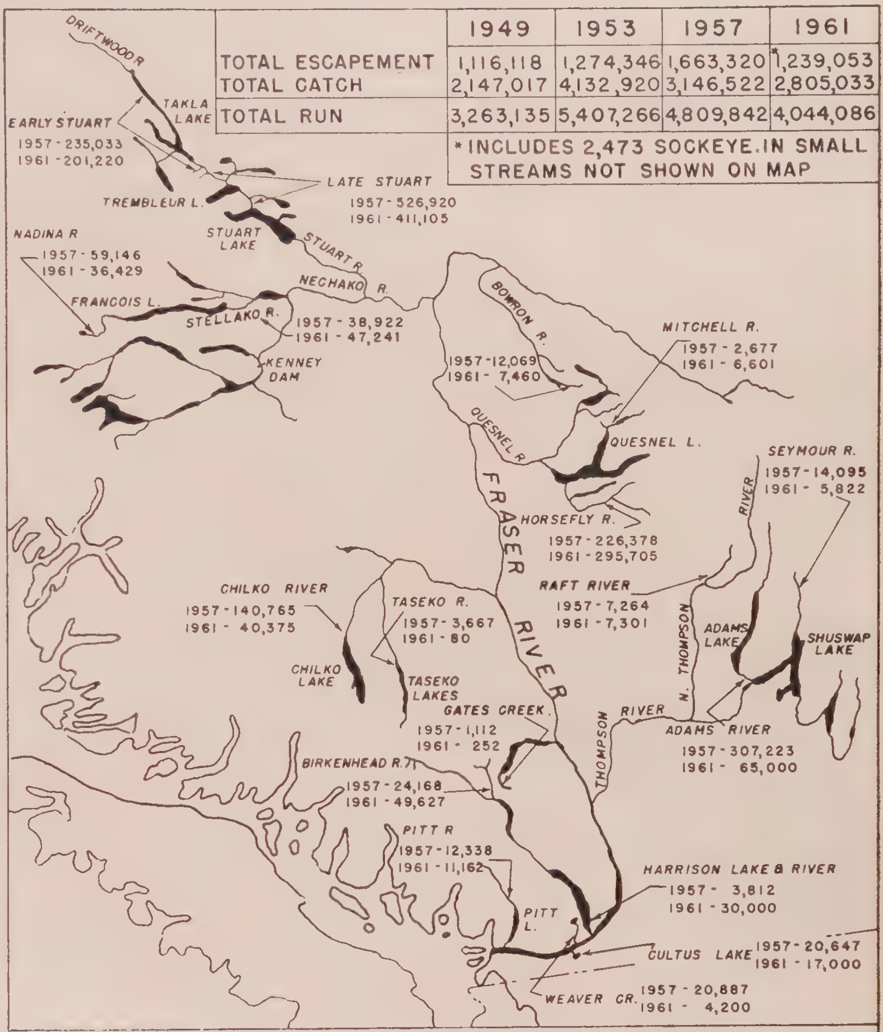
ment and artificial propagation. "With the assistance of the two governments," said Mr. Royal, "we intend to do our part to avoid the construction of costly fish protective facilities which are experimental at the outset and usually fail at the expense of future fish runs."

Under the salmon treaty the commission is obligated to advise in regard to those things which are required for the protection of the Fraser River Sockeye and Pink fisheries, and Mr. Royal says that a great amount of data has been amassed over the years. "But we still lack in the fundamental knowledge required to devise practical methods for fully protecting the resource."

- During 1961 the Canadian Department of Fisheries concentrated on the Big Qualicum River project on Vancouver Island. The Big Qualicum has a high potential as a spawning area for Sockeye other than salmon and and while the cost of the engineering and construction job now under way will probably exceed $1,000,000 it is expected that the return in increasing number of fish for the commercial fishery will offset the expenditure in a few years.

On its way to the sea, the Big Qualicum, which rises in Horne Lake, drops more than 300′ along its eight-mile length. Main purpose of the work carried out there by the department's engineers and work crew is to prevent flash floods and periods of drought. The river's flow is to be controlled by a system of dams and spillways now under construction.

An earth fill dam has been built at the outlet of the lake 28 feet above the normal elevation to provide sufficient storage for flood control. A spillway channel has been built to meet any extremely high flood that may occur. A part of the over-all structure



	1949	1953	1957	1961
TOTAL ESCAPEMENT	1,116,118	1,274,346	1,663,320	*1,239,053
TOTAL CATCH	2,147,017	4,132,920	3,146,522	2,805,033
TOTAL RUN	3,263,135	5,407,266	4,809,842	4,044,086

*INCLUDES 2,473 SOCKEYE IN SMALL STREAMS NOT SHOWN ON MAP

RACIAL ESCAPEMENT FIGURES-1961 CYCLE

FRASER RIVER SOCKEYE

Fraser River Sockeye Salmon Catch by Cycles

British Columbia	1939-	568,943	1940-	1,033,000	1941-	2,116,723	1942-	5,047,599	British Columbia
Washington		555,233		654,091		1,558,554		2,935,192	Washington
TOTAL		1,124,176		1,687,091		3,675,277		7,982,791	TOTAL
British Columbia	1943-	349,011	1944-	1,003,826	1945-	969,444	1946-	4,240,198	British Columbia
Washington		242,077		435,443		706,464		3,551,306	Washington
TOTAL		591,088		1,439,269		1,675,908		7,791,504	TOTAL
British Columbia	1947-	355,035	1948-	752,691	1949-	1,020,799	1950-	894,469	British Columbia
Washington		88,220		1,089,091		1,056,792		1,220,893	Washington
TOTAL		443,255		1,841,782		2,077,591		2,115,362	TOTAL
British Columbia	1951-	1,288,162	1952-	1,154,383	1953-	1,992,343	1954-	4,722,463	British Columbia
Washington		1,136,795		1,113,475		2,032,437		4,806,258	Washington
TOTAL		2,424,957		2,267,858		4,024,780		9,528,721	TOTAL
British Columbia	1955-	1,108,081	1956-	894,836	1957-	1,360,760	1958-	5,241,617	British Columbia
Washington		1,006,610		906,872		1,689,265		5,257,316	Washington
TOTAL		2,114,691		1,801,708		3,050,025		10,498,933	TOTAL
British Columbia	1959-	1,581,883	1960-	1,255,195	*1961-	1,357,000			British Columbia
Washington		1,810,738		1,198,969		1,378,000			Washington
TOTAL		3,392,621		2,454,164		2,735,000			TOTAL

*Figures for 1961 are preliminary. Figures in this table, taken from reports of the International Pacific Salmon Fisheries Commission, represent the actual numbers of Sockeye known to have been caught in waters covered by the Fraser River Sockeye Salmon treaty. No reliable catch statistics for years prior to 1939.

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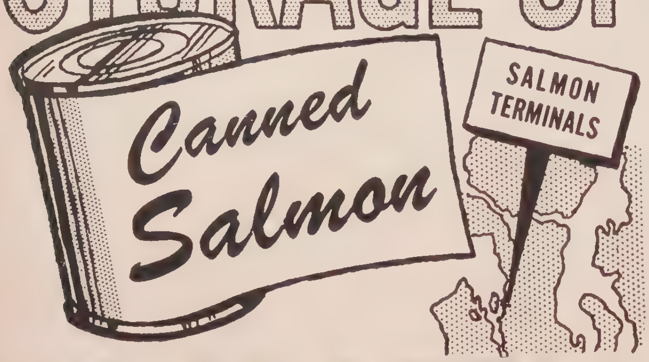

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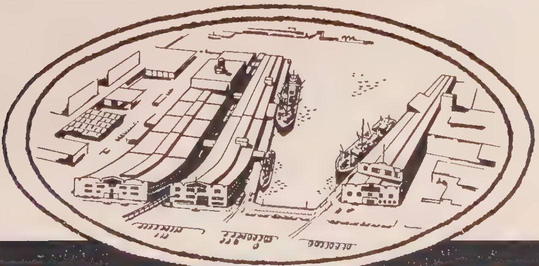

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is a 98′ deep concrete-lined shaft with three separate intakes from the lake. A tunnel has been built 8′ in diameter at the base of the shaft, about 70′ below the normal level of the lake last season, extending 2,000′ downstream to a point on the north bank of the river, below the falls.

By controlling the flow into the tunnel, through each intake, the river can be regulated as to volume and temperature to encourage spawning. Hunts Creek flows into the Big Qualicum four miles downstream from Horne Lake, and to maintain regular flows below that point it was necessary to control the Hunts Creek runoff, this being accomplished by diverting the major flow of the creek by an open-cut flood channel, two and a half miles long, emptying into the Big Qualicum estuary at tide level. A 20-foot diversion dam was required for that purpose.

When the project is completed—in time for the 1962 spawning season—it will be possible to maintain a regulated flow of 200 cubic feet per second in the Big Qualicum during the spawning period. With spawning conditions stabilized it is expected that the Big Qualicum will be able to accommodate at least twice as many salmon as spawned in the peak year to date, or a total of 200,000 fish. Provision is made for expansion of the spawning areas as may be required.

Gravel is being cleaned and graded according to the standards found most satisfactory at other artificial spawning areas at Robertson Creek and Hones Creek on the Fraser.

Results from the Big Qualicum will be closely followed because its success may point the way to development of similar projects aimed at increasing the spawning potential of B. C. rivers and lakes.

- Another interesting project was a new hatchery on the Nanika river, a tributary of the Skeena, whose Sockeye runs were disturbed by the slide on the Babine in 1952. Losses resulting directly from the slide were understandable, but the department was concerned by the continuing decline.

Fish culture biologists undertook a survey, working in collaboration with engineers and the Skeena management committee. The hatchery resulting from these investigations embodies the latest facilities and is, in a sense, a portable unit. The hatchery section occupies a floor area of only 480 feet, but has a capacity of over 10,000,000 Sockeye eggs as a result of using vertical stacks of incubator trays, each of which holds 10,000 eggs.

Over 5,000,000 eggs were collected from Pinkut Creek on Babine Lake and transferred to the hatchery in 1961. The fry will be released this spring.

The department also built an experimental spawning bed on Great Central Lake, Vancouver Island, as a safeguard against possible power development that would raise the water elevation. Evidence was discovered by skindivers that Sockeyes have successfully spawned in the lake at a depth of 70′ feet, but the spawning area might be jeopardized by raising the water level still higher. Creation of a gravel beach, it is hoped, will induce the Sockeye to spawn in more favorable ground.

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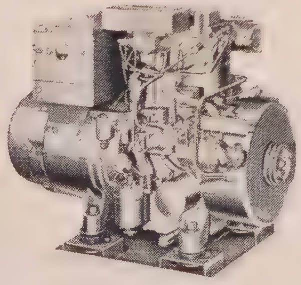

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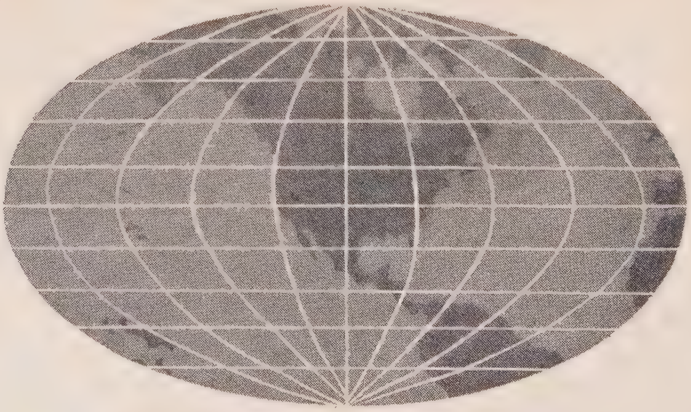

FISHERMEN'S PACKING CORPORATION

MAIN OFFICE AND CANNERY ANACORTES, WASHINGTON

PUGET SOUND SALMON

A Year of Disappointment

● Puget Sound salmon canning produced 285,924 cases in 1961—a lot below the cycle year, 1957, when the pack was 600,795 cases.

It was a year of disappointment, with only 66,216 cases of Pinks, barely more than 10% of the pack as recently as 1947. Not much had been expected for Pinks in the first cycle year following the disastrous effect of the high water of 1959 of Pink salmon spawn on the Fraser.

Most of the Pinks which contributed to the pack were races bound to minor streams. The Pink run to the Fraser, which had suffered disaster two years before, had to be conserved with rigorous closures if the future of the resource was to be protected.

Sockeyes were also a disappointment, particularly to the purse seiners. The gillnetters did not do too badly, but the seiners took a beating—and all the more so because the amount of gear present on both sides of the boundary made fishing per-boat even poorer than the pack proclaims.

Chums were weak, almost as bad as the year before, and are giving real concern.

Silvers, with three times the pack of the year before, might be counted good; but they still were only about half the 10-year average pack of 67,000 cases for this species.

● Sockeye and Pink salmon catch on Puget Sound in 1961 proved bitterly disappointing to the great fleet massed to harvest it, disappointing because the fleet had expected a richer catch of Sockeye at least, in spite of the conservative forecast voiced months earlier by the scientific staff of the International Pacific Salmon Fisheries Commission.

That forecast had been for a probable run of 5 million fish, plus or minus 1 million; and of which 1 million would be needed for escapement.

The fishermen, and the industry, felt this was too conservative; and so mounted a powerful fishing effort. Ultimate disappointment lay not so much in the amount of the catch of Sockeye, which was closely in line with the lower range of the forecast, as with the individual shares per fisherman after the catch of about 2.8 million fish to both countries was divided among the men manning the gear.

As a matter of fact, the pack of Sockeye from convention waters in 1961 was some 14,000 full cases larger than that of the cycle year 1957, and actually was the third largest pack made on the 1961 cycle since 1917.

It was far below what had been hoped for, that is true.

The high hopes which the industry held for the Sockeye run of 1961 were based on the seaward migration of 1959, when the young Sockeye which would grow into the mature fish of 1961 passed down the Fraser and out to sea. They came primarily from Chilko Lake and Quesnel Lake, and their numbers were prodigious. At the time the scientists said that, given a reasonably good sea survival, they *could* produce a magnificent run in 1961.

By the close of 1960 the Salmon Commission's staff was convinced that this "reasonably good sea survival" had not been forthcoming and that, in fact, the great seaward migration of 1959 had encountered adverse conditions in salt water. On this the staff based its conservative forecast for 1961.

The industry, more hopeful, and doubting the importance of the sea survival data, expected the run to double the forecast, and mounted its fishing effort accordingly.

The result was bitter disappointment and loss from a run which might have produced an average profit if it had been fished more conservatively and in line with the forecast.

● Pink salmon run to the Fraser River was even poorer than the Sockeyes, but this was less disappointing because not so much had been expected of it.

Here also the Salmon Commission's staff forecast a small run; but here the forecast was too high. The run was lower than had been anticipated and a fairly adequate escapement was secured only at the expense of drastic closures which kept the fleets of both countries tied up for many weeks when they had hoped to be fishing.

● Moderately satisfactory escapements were secure from the runs of both species, but the conditions which the Sockeyes encountered on the spawning grounds were desperately bad. The Pink spawners, on the other hand, found conditions very much to their liking.

As is discussed more in detail elsewhere in this issue, the water temperatures on the principal spawning grounds sought by the important Sockeye races of the 1961 run were among the highest yet recorded in the Fraser tributaries. In large part the spawners arrived at times when the warm water rendered them susceptible to disease, so that large numbers—representing a substantial percentage of the escapement—died without spawning.

Outlook for 1962 Sockeyes Poor

● Despite the fact that the 1958 Sockeye run to the Fraser was one of the greatest on record, with an excellent spawning escapement reaching the spawning grounds under favorable conditions; and that the seaward migration of smolts in 1960 was composed of enormous numbers of healthy fish, the Salmon Commission staff just before the end of 1961 forecast that the Sockeye run of 1962 would be

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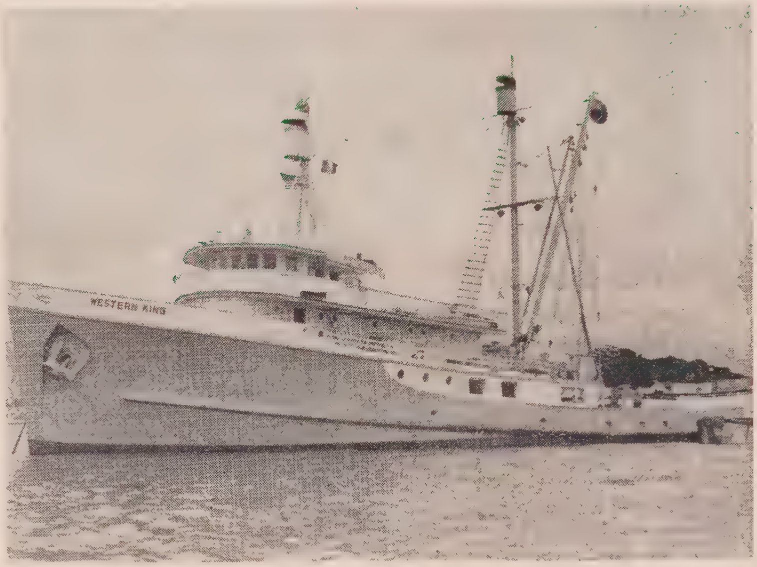

January 15, 1962

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so poor that it might not be able to support a commercial fishery.

This forecast was based on evidence pointing to marine survival so low as to be disastrous.

The young seaward migrants entered salt water at a time when the Fraser was near its all-time record low—a condition associated with heavy mortality among the young fish. This was apparent and reported upon at the time.

With the run of 1960 came a number of three-year fish or "jacks", precocious immatures of the run which will mature in 1962. These fish carried evidence in their scales and rates of growth, as well as their small numbers, confirming the adverse effect of the low river levels and high Gulf of Georgia salinity in 1959.

Thus the outlook for Fraser Sockeye in 1962 is poor. It being an even year, there will be no Pinks.

● Bright spot in the Puget Sound salmon fishery of 1961 was the excellent run of Silvers. In this respect all of the Pacific Northwest and British Columbia fisheries shared the good fortune.

After a number of years of poor Silver runs, sometimes leading the fishermen and sportsmen alike almost to the point of dispair with respect to this species, the Silvers came back throughout the entire southerly section of their range in surprising abundance.

They were a welcome addition to the canned pack and also to the pack of frozen Silvers.

● Purse seiners suffered particularly during the 1961 Sockeye run due to the relative ineffectiveness of this gear as compared with their principal competitors, the gillnets. This condition is disclosed in a comparison of the percentages of the Sockeye catch made by the several forms of gear in the two Sockeye years, 1957 and 1961. Data for the two fleets works out thus:

Country—	1957	1961
Canada	%	%
GN, Strait	14.8	22.0
GN, River	43.6	51.3
Seines	41.6	26.7
	100.0	100.0
United States		
Seines	70.2	59.1
Gillnets	17.9	34.9
Reefnets	11.9	6.0
	100.0	100.0

Run Tops Cycle Average

● While the fishermen — particularly the purse seiners and reefnetters — considered the 1961 run of salmon — both Pinks and Sockeyes — are poor and unprofitable, the International Sal-

PUGET SOUND CANNED SALMON PACK - 1961

COMPANY	CANNERY LOCATION	SOCKEYE				PINK			CHUM			COHO or SILVER			KING or CHINOOK	GRAND TOTAL (Full Cases)
		1-lb. Talls & 4-lb. Flats etc.	1/2 lb. Flats (48 lbs.)	1/4 lb. Flats (48 lbs.)	TOTAL	1-lb. Talls & 4-lb. Flats etc.	1/2 & 1/4 lb. Flats (48 lbs.)	TOTAL	1-lb. Talls & 4-lb. Talls etc.	1/2 & 1/4 lb. Flats (48 lbs.)	TOTAL	1-lb. Talls & 4-lb. Flats etc.	1/2 & 1/4 lb. Flats (48 lbs.)	TOTAL	All Sizes	
American Packing Co.	Anacortes	1	2,698	510	3,209	340	746	1,086	7,563	1,599	9,162	40	31	71	---	13,528
Alaska Packers Ass'n.	Blaine	---	13,793	---	13,793	---	4,538	4,538	---	---	---	---	169	169	---	18,500
Arctic Maid Fisheries	Seattle	7,507	---	---	7,507	---	---	---	43	---	43	---	---	---	---	7,550
Bumble Bee Seafoods Inc.	Puget Sound	---	3,287	8,429	11,716	---	4,043	4,043	---	12	12	---	458	458	---	16,229
Dressel-Collins Fish Co.	Seattle	75	---	1,375	1,450	2,391	2,388	4,779	1,626	987	2,613	57	925	982	---	9,824
Emard Packing Co.	Seattle	4,648	---	---	4,648	1,617	---	1,617	1,811	915	2,726	---	---	---	---	8,991
Fidalgo Island Packing Co.	Bellingham	5	8,999	1,245	10,249	480	2,013	2,493	259	5	264	1,743	671	2,414	---	15,420
Fishermen's Pkg. Corp.	Anacortes	---	10,102	7,026	17,128	1,601	7,679	9,280	769	951	1,720	25	3,084	3,109	295	31,532
Friday Harbor Canning Co.	Bellingham	---	209	---	209	---	---	---	---	---	---	---	---	---	---	209
P. E. Harris Co. Inc.	Puget Sound	---	1,966	1,145	3,111	---	1,361	1,361	---	---	---	---	79	79	94	4,645
Jackson, John C. Inc.	Friday Harbor	---	1,115	642	1,757	---	151	151	---	8	8	---	181	181	---	2,097
Nakat Packing Corp.	Anacortes	---	8,175	---	8,175	34	2,173	2,207	---	30	30	---	832	832	28	11,272
Nelbro Packing Co.	Point Roberts	---	---	---	---	---	---	---	8,830	---	8,830	---	---	----	---	8,830
New England Fish Co.	Puget Sound	17	5,627	765	6,409	2,814	3,522	6,336	1,137	1,463	2,600	4,315	792	5,107	---	20,452
Pacific American Fisheries	Puget Sound	950	3,607	2,649	7,206	27	1,988	2,015	170	257	427	185	1,120	1,305	1	10,954
Sebastian-Stuart Fish Co.	Anacortes	---	2,622	1,737	4,359	364	1,452	1,816	458	342	800	---	791	791	---	7,766
Seaport Fish Co.	Seattle	---	394	---	394	190	1,322	1,512	5,929	450	6,379	669	6,059	6,728	589	15,602
Vita Food Products, Inc.	Seattle	---	---	---	---	---	---	---	54	---	54	---	307	307	---	361
Washington Fish & Oyster Co.	Seattle	1,888	5,325	4,190	11,403	5,005	3,744	8,749	7,413	2,059	9,472	917	2,009	2,926	80	32,630
Whitney & Co.	Anacortes	---	4,357	4,585	8,942	---	3,805	3,805	771	266	1,037	462	2,393	2,855	458	17,097
Whiz Fish Products Co.	La Conner	26	9,969	2,217	12,212	4,404	5,832	10,236	2,822	---	2,822	3,713	460	4,173	---	29,443
	Seattle	656	407	---	1,063	192	---	192	63	---	63	478	986	1,464	210	2,992
TOTALS		15,773	82,652	36,515	134,940	19,459	46,757	66,216	39,718	9,344	49,062	12,604	21,347	33,951	1,755	285,924

NOTE: This table for canned salmon packed on Puget Sound in 1961 includes some fish brought from Alaska and some imported from British Columbia for canning on Puget Sound.

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PUGET SOUND CANNED SALMON PACK

Puget Sound salmon canning commenced in 1877 with a pack of 5,500 cases, but no segregation by species is available prior to 1889. From the beginning producti increased, with much fluctuation, to 22,000 cases in 1887; the average for intervening years being 7,867 cases. Values shown are based on opening prices. "Averag figures at bottom of table are for last ten years.

YEAR	# of Plants Oper.	Sockeye		Pink		Chum		Coho		Chinook		TOTAL		YEAR
		Cases	Value	Cases	Value	Cases	Value	Cases	Value	Cases	Value	Cases	Value	
1888	4	...	...	...	...	...	...	...	...	...	...	21,975	$126,356	1888
1889	2	...	...	2,809	$7,584	1,145	$3,435	7,480	$37,400	240	$1,200	11,674	49,619	1889
1890	1	...	...	...	...	4,000	12,000	3,000	15,000	1,000	5,000	8,000	32,000	1890
1891	2	5,538	$24,921	5,647	15,246	3,093	10,825	5,869	19,368	382	2,101	20,529	72,461	1891
1892	2	2,954	11,816	...	...	16,180	56,630	7,206	24,500	86	473	26,426	93,419	1892
1893	3	47,852	103,371	17,530	47,331	11,380	31,295	11,812	59,060	1,200	6,480	89,331	247,537	1893
1894	3	41,781	188,014	9,049	24,432	22,152	60,918	22,418	89,672	...	...	95,400	363,036	1894
1895	7	65,143	273,108	23,633	62,556	38,785	94,741	50,865	154,218	1,542	7,325	179,968	591,948	1895
1896	11	72,979	350,299	...	...	26,550	73,013	82,640	264,448	13,495	67,475	195,664	755,235	1896
1897	12	312,048	1,248,192	57,268	171,804	23,310	64,103	91,900	282,133	9,500	39,045	494,026	1,805,277	1897
1898	18	252,000	1,058,400	...	...	38,400	105,600	98,600	335,240	11,200	50,624	400,200	1,549,864	1898
1899	19	499,646	2,368,334	252,733	734,241	31,481	86,427	111,387	418,176	24,364	103,180	919,611	3,170,358	1899
1900	19	228,704	1,149,000	...	...	89,100	245,025	128,200	512,800	22,350	134,100	469,450	1,940,925	1900
1901	..	1,105,096	...	275,494	...	...	...	...	...	...	...	1,380,590	...	1901
1902	21	339,556	2,047,655	...	...	93,492	467,460	85,817	429,085	30,049	150,245	548,914	3,094,445	1902
1903	22	167,211	1,003,260	181,236	407,984	12,001	30,002	103,450	413,800	14,500	72,500	478,398	1,929,546	1903
1904	13	123,419	653,871	...	...	49,656	124,254	118,127	447,851	14,441	69,352	305,643	1,295,328	1904
1905	24	847,122	4,952,718	70,992	212,976	41,057	102,643	79,335	337,174	1,804	9,922	1,040,310	5,615,433	1905
1906	16	182,241	1,251,236	...	...	149,218	708,781	94,497	472,485	8,139	48,834	430,602	2,481,336	1906
1907	14	93,122	698,416	433,423	1,300,269	50,249	150,847	119,472	476,288	1,814	16,326	698,080	2,642,146	1907
1908	22	170,951	1,196,657	6,075	18,225	47,607	142,821	128,922	644,922	95,210	864,470	448,765	2,669,095	1908
1909	11	1,097,904	6,183,300	370,993	902,342	53,688	128,916	143,133	630,446	13,0[illegible]9	72,604	1,632,949	7,917,608	1909
1910	24	248,014	1,673,095	108	388	146,942	514,297	162,755	895,153	10,064	60,324	567,883	3,143,256	1910
1911	15	127,761	1,168,145	1,046,992	4,302,344	104,321	392,122	256,124	1,591,185	21,823	172,582	1,557,021	7,727,524	1911
1912	20	184,680	1,660,173	700	2,185	60,760	154,193	149,727	761,200	20,252	101,706	416,125	2,679,457	1912
1913	22	1,673,099	10,871,178	791,886	2,092,401	56,225	124,970	61,019	235,372	1,234	5,247	2,583,463	13,329,168	1913
1914	31	335,230	3,208,969	892	4,212	278,801	955,920	151,893	759,689	26,044	167,322	792,860	5,095,839	1914
1915	41	64,584	676,769	583,649	1,795,285	411,724	155,744	180,783	902,335	28,466	145,555	1,269,206	4,675,418	1915
1916	32	84,637	699,161	1,887	8,264	427,878	1,492,161	155,832	957,650	37,030	280,708	707,278	3,437,944	1916
1917	45	411,538	5,366,218	1,124,884	7,823,960	216,285	1,362,634	114,276	1,065,983	57,543	540,904	1,921,554	16,159,699	1917
1918	32	50,723	781,992	6,605	53,336	267,538	1,715,159	235,860	2,532,553	63,472	754,637	624,198	5,837,677	1918
1919	35	64,346	1,186,413	421,215	3,854,113	525,541	1,687,787	210,883	2,618,504	73,618	910,968	1,295,626	12,257,785	1919
1920	11	62,654	1,725,252	4,669	28,860	48,849	3,225,368	24,502	221,688	25,846	370,215	166,520	2,571,385	1920
1921	23	102,967	1,991,368	404,713	1,870,385	30,831	123,608	89,412	798,541	25,567	199,609	653,490	4,983,511	1921
1922	16	48,566	945,178	2,225	13,273	65,552	283,395	111,771	744,656	20,615	222,641	248,729	2,209,143	1922
1923	18	47,402	860,000	475,849	2,429,800	97,081	471,790	122,000	785,000	15,806	150,407	758,138	4,696,997	1923
1924	12	69,369	1,182,358	5,945	39,192	134,360	651,014	87,879	688,950	20,096	216,043	317,649	2,777,557	1924
1925	23	112,023	2,098,683	553,904	3,179,302	43,345	207,546	173,215	1,902,289	29,183	432,349	911,670	7,820,169	1925
1926	14	44,673	532,408	2,107	15,095	112,204	573,411	123,469	1,163,286	27,972	365,826	310,425	2,650,026	1926
1927	21	97,594	2,115,410	578,923	3,669,941	38,129	225,654	135,802	1,358,020	41,796	588,314	892,244	7,957,339	1927
1928	14	60,081	1,207,981	5,597	41,091	146,356	833,114	89,923	777,472	23,419	294,816	325,376	3,154,[illegible]24	1928
1929	22	111,898	2,203,496	727,621	4,639,076	156,683	911,584	101,635	1,044,372	34,007	439,778	1,131,844	9,238,306	1929
1930	12	352,194	4,890,921	3,712	18,486	64,234	237,123	122,691	1,240,876	29,775	407,912	572,606	6,795,318	1930
1931	18	83,728	1,316,348	705,580	2,486,377	55,189	177,000	76,025	569,699	28,359	293,022	948,881	4,842 446	1931
1932	10	78,319	897,006	1,677	5,779	146,151	381,116	60,740	330,385	24,024	168,625	310,911	1,782,912	1932
1933	19	125,738	1,340,000	543,340	2,643,528	37,039	171,742	44,568	292,684	21,091	221,776	771,776	4,669,910	1933
1934	21	340,787	3,632,587	3,296	17,331	72,841	251,991	69,080	517,901	14,089	74,024	500,093	4,493,834	1934
1935	14	51,714	720,076	369,620	1,652,161	15,636	68,402	70,514	534,956	9,243	91,396	516,727	3,066,991	1935
1936	9	60,063	813,510	1,152	7,598	86,070	315,465	30,568	292,528	4,708	43,427	182,561	1,472,528	1936
1937	13	56,983	925,160	327,973	1,676,692	18,759	91,696	31,747	323,976	6,412	76,750	441,874	3,094,274	1937
1938	13	139,152	1,824,396	455	2,641	7,697	32,193	10,268	100,753	2,371	36,800	159,943	1,996,783	1938
1939	14	43,561	669,202	282,271	1,574,317	15,080	76,786	54,905	485,760	2,446	33,508	398,263	2,839,573	1939
1940	9	62,748	1,122,684	2,947	17,432	23,405	114,798	30,654	231,878	1,674	15,734	121,428	1,502,526	1940
1941	9	110,758	2,140,457	153,924	1,203,657	25,423	187,224	46,213	553,230	4,769	62,354	341,087	4,146,922	1941
1942	10	258,488	5,255,888	851	7,965	2,223	17,748	6,862	97,693	1,204	26,389	269,628	5,405,683	1942
1943	10	19,149	424,339	62,129	637,730	243	2,432	26,292	390,847	2,864	12,456	110,677	1,467,804	1943
1944	3	37,214	830,719	299	3,313	...	...	373	5,883	1,064	21,240	38,950	861,155	1944
1945	6	53,532	1,176,467	305,245	2,724,176	1,184	12,467	18,802	258,076	3,639	63,511	382,402	4,234,697	1945
1946	20	271,311	10,108,350	91	2,184	47,099	989,079	7,118	163,714	6,841	268,120	332,460	11,531,447	1946
1947	25	7,516	315,956	639,426	13,423,416	139,131	2,532,194	79,450	2,254,404	29,143	875,098	894,666	19,401,068	1947
1948	22	91,268	5,005,792	4,645	128,328	245,133	5,558,820	70,659	2,049,606	27,043	903,578	438,748	13,646,124	1948
1949	23	94,627	2,959,425	557,740	9,305,100	162,532	2,381,000	55,910	1,273,000	8,594	224,000	879,403	16,142,525	1949
1950	20	128,385	4,984,208	2,277	61,855	512,997	10,752,172	116,655	3,454,279	8,215	191,712	768,529	19,444,226	1950
1951	25	156,461	5,815,837	441,605	9,419,295	233,468	3,922,457	88,511	2,200,801	11,275	281,794	931,320	21,640,184	1951
1952	20	114,707	5,153,778	817	51,026	292,318	5,147,662	172,910	4,079,424	7,869	178,654	588,621	14,610,544	1952
1953	22	164,848	6,041,592	440,860	8,239,810	144,542	1,761,160	54,901	1,012,224	3,974	106,937	809,125	17,161,723	1953
1954	21	507,719	16,364,291	1,429	32,314	272,455	4,292,256	29,252	742,533	5,054	119,568	815,909	21,550,962	1954
1955	23	81,913	3,088,120	411,280	9,108,207	88,672	1,745,505	63,526	1,886,722	10,177	253,698	655,568	16,082,252	1955
1956	15	70,285	2,865,168	320	7,382	47,068	987,721	59,481	1,836,178	3,582	100,475	180,736	5,796,924	1956
1957	20	189,406	7,750,894	228,930	5,426,423	88,623	1,615,502	87,339	2,486,215	6,497	186,205	600,795	17,465,239	1957
1958	19	415,645	16,299,811	2,374	51,853	145,715	2,397,298	38,351	1,190,264	2,106	66,327	604,191	20,005,553	1958
1959	23	134,739	6,467,272	184,448	4,426.752	156,074	3,277,554	76,377	2,673,195	10,221	327,072	561,859	17,171,845	1959
1960	21	122,317	6,394,924	3,776	106,831	48,003	1,109,717	11,286	476,766	2,535	84,101	187,917	8,172,339	1960
1961	22	134,940	7,747,000	66,216	1,920,264	49,062	1,275,612	33,951	1,188,320	1,755	61,425	285,924	12,192,621	1961
Aver.	21	195,804	7,624,169	171,584	3,686,989	151,694	2,625,683	68,193	1,858,432	6,329	170,483	593,604	15,965,756	Aver.

NOTE: Figures for the last year in this table are from "PACIFIC FISHERMAN'S" compilation. Those for previous years have been revised from official data. "Average" is for the ten years preceding the current year.

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mon Commission following the end of fishing on runs to the boundary waters of Washington and British Columbia pointed out:

1. The Sockeye run of 1961 was the third largest *on its cycle* since the year 1917.

2. The preceding run, that of 1960, was the second largest on that cycle in 48 years.

3. Going back another year to 1959, the run was the largest in 56 years on *that* cycle.

4. The Sockeye run of 1958 was the *all-time record* for that cycle, and one of the largest in the whole recorded history of the Fraser River's Sockeye resource.

● Reason for the feeling among the fishermen that recent years have not been good ones, the Commission pointed out late in 1961, lies in the over-development of the fleet.

This is not alone in numbers of boats and fishermen, the Commission citing also:

1. Development of the Strait fishery by the Canadian fleet, which produces a third major area of exploitation;

2. Increased efficiency of the seiners through use of power blocks and drum seines;

3. Enormously increased efficiency of the gear as result of the use of synthetic nets;

4. Greatly increased mobility of the fleet, whose high-speed boats are able to shift from one area to another, defeating effective administration;

5. Increased knowledge on the part of the fishermen of where and how and when to fish the runs most effectively.

To counter this increased fleet effectiveness, and still discharge its responsibility for conservation of the resource and division of the allowable catch equally between the two countries, the Commission has found it necessary to reduce the fishing week drastically.

This extremely short fishing period, while necessary under existing conditions, is unsatisfactory from the standpoint both of the fishermen and the Commission. This is because it may make the operating time of the vessels so short as to be uneconomic; and does not provide the Commission with sufficient information regarding the size and composition of the run to enable it effectively to administer the fishery to given adequate escapement and approximate division of the catch.

Summing up, the Commission declared:

"It is vital to the prosperity of the industry, and to the conservation of the Fraser River resource, that the intensity of fishing pressure be brought to a rational standard."

There was some reason to anticipate as 1962 opened that the legislative authorities of the State of Washington at least might undertake to control the intensity of fishing or the numbers of the American fleet.

Fishermen in British Columbia also were urging on parliament the adoption of a license limitation program.

● The Sockeye run of 1961 started well, with the early races being up to all expectations. However, later races showed the effect of adverse marine conditions which they probably encountered on their entrance to salt water. Extraordinary closures permitted a fair escapement for spawning purposes, but on the spawning grounds the Sockeye again encountered highly adverse natural conditions, primarily due to the record high temperatures. In some major spawning tributaries the mortality of unspawned salmon amounted to a very substantial percentage of the entire run.

Pink salmon run of 1961 was not expected to be anything than poor, and the forecast was fulfilled.

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Fraser River-Puget Sound Sockeye Pack, by Cycles

British Columbia	1895-	395,984	1896-	356,984	1897-	860,459	1898-	256,101	British Columbia
Washington		65,143		72,979		312,048		252,000	Washington
TOTAL		461,127		429,963		1,172,507		508,101	TOTAL
British Columbia	1899-	480,485	1900-	229,800	1901-	928,669	1902-	293,477	British Columbia
Washington		499,646		228,704		1,105,096		339,556	Washington
TOTAL		980,131		458,504		2,033,765		633,033	TOTAL
British Columbia	1903-	204,809	1904-	72,688	1905-	837,489	1906-	183,007	British Columbia
Washington		167,211		123,419		837,122		182,241	Washington
TOTAL		372,020		196,107		1,674,611		365,248	TOTAL
British Columbia	1907-	59,815	1908-	74,574	1909-	585,435	1910-	150,432	British Columbia
Washington		96,974		170,951		1,097,904		248,014	Washington
TOTAL		156,789		245,525		1,683,339		398,446	TOTAL
British Columbia	1911-	58,487	1912-	123,879	1913-	719,796	1914-	198,183	British Columbia
Washington		127,761		184,680		1,673,099		335,230	Washington
TOTAL		186,248		308,559		2,392,895		533,413	TOTAL
British Columbia	1915-	91,130	1916-	32,146	1917-	148,164	1918-	19,697	British Columbia
Washington		64,584		84,637		411,538		50,723	Washington
TOTAL		155,714		116,783		559,702		70,420	TOTAL
British Columbia	1919-	38,854	1920-	48,399	1921-	39,631	1922-	51,832	British Columbia
Washington		64,346		62,654		102,967		48,566	Washington
TOTAL		103,200		111,053		142,598		100,398	TOTAL
British Columbia	1923-	31,655	1924-	39,743	1925-	35,385	1926-	85,689	British Columbia
Washington		47,402		69,369		112,023		44,673	Washington
TOTAL		79,057		109,112		147,408		130,362	TOTAL
British Columbia	1927-	61,393	1928-	29,299	1929-	61,569	1930-	103,692	British Columbia
Washington		97,594		61,044		111,898		352,194	Washington
TOTAL		158,987		90,343		173,467		455,886	TOTAL
British Columbia	1931-	40,947	1932-	65,769	1933-	52,465	1934-	139,238	British Columbia
Washington		87,211		81,188		126,604		352,579	Washington
TOTAL		128,158		146,957		179,069		491,817	TOTAL
British Columbia	1935-	62,822	1936-	184,854	1937-	100,272	1938-	186,794	British Columbia
Washington		54,677		59,505		60,259		134,641	Washington
TOTAL		117,499		244,359		160,531		321,435	TOTAL
British Columbia	1939-	54,296	1940-	99,009	1941-	171,290	1942-	446,371	British Columbia
Washington		43,511		59,354		110,605		263,458	Washington
TOTAL		97,807		158,363		281,895		709,829	TOTAL
British Columbia	1943-	31,973	1944-	88,515	1945-	79,781½	1946-	331,292	British Columbia
Washington		19,179		37,509		53,054½		280,018	Washington
TOTAL		51,152½		126,024		132,836		611,310	TOTAL
British Columbia	1947-	27,857	1948-	61,650	1949-	80,629	1950-	81,510	British Columbia
Washington		7,516		90,441		80,547		116,458	Washington
TOTAL		35,373		152,091		161,176		197,968	TOTAL
British Columbia	1951-	134,400	1952-	115,814	1953-	176,097	1954-	486,805	British Columbia
Washington		118,151		114,638		178,323		501,496	Washington
TOTAL		252,551		230,452		354,420		988,301	TOTAL
British Columbia	1955-	95,377	1956-	84,296	1957-	99,398	1958-	418,704	British Columbia
Washington		85,136		84,052		119,985		450,066	Washington
TOTAL		180,513		168,348		219,383		868,770	TOTAL
British Columbia	1959-	123,248	1960-	98,795	*1961-	118,000			British Columbia
Washington		135,489		96,627		119,000			Washington
TOTAL		258,737		195,422		237,000			TOTAL

*Figures for 1961 are approximate. Statistics represent 48-lb. cases of Sockeyes caught in the Fraser River district of British Columbia and adjacent waters of the State of Washington, whether canned in those districts or elsewhere -- and not including other Sockeye canned in those districts. This accounts in large part for the discrepancy between these statistics and those appearing elsewhere in this issue.

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COLUMBIA RIVER SALMON

- Columbia River, once the greatest salmon producer of all; and always the prime source of the world's prime Chinooks, packed only 57,000 cases of the species in 1961; and only 94,852 cases of all varieties.

At that, the pack was substantially better than the year before, when the figure was 72,000, just half the 10-year average of 144,000 cases.

Brightest spot in the Columbia salmon picture of 1961 was the pack of Silvers, 24,444 full cases, reflecting the greatly improved run of this species experienced all along the coast north to Southeast Alaska. The Columbia River in this category over the past decade is 19,669 cases.

- The Columbia unquestionably shows the effects of concentrated pressures: dams and pollution, mostly dams; increasing sport fishing at sea and in the streams; intense ocean trolling sup-

1961-COLUMBIA RIVER CANNED SALMON PACK

COMPANY	LOCATION	CHINOOK							SILVERSIDE			BLUEBACK			CHUMS			STEELHEAD TROUT			GRAND TOTAL (Full cases)
		Fancy				Other Grades															
		1 lb. Flats & Ovals	1/2 lb. Flats & Ovals	1/4 lb. Flats & Ovals	Total	1/2 lb. Flats & Ovals	1/4 lb. Flats & Ovals	Total	1/2 lb. Flats & Ovals	1/4 lb. Flats & Ovals	Total	1/2 lb. Flats & Ovals	1/4 lb. Flats & Ovals	Total	1 lb. Talls	1/2 lb. Flats & Ovals	Total	1/2 lb. Flats & Ovals	1/4 lb. Flats & Ovals	Total	
Barbey Packing Co.	Astoria, Ore.	---	4,214	---	4,214	2,079	---	2,079	782	---	782	640	---	640	---	---	---	303	---	303	8,018
Bumble Bee Seafoods, Inc.	Astoria, Ore.	---	11,103	1,704	12,807	8,192	242	8,434	2,885	7,423	10,308	---	751	751	---	4	4	---	3,074	3,074	35,378
Chinook Packing Co.	Chinook, Wash.	---	1,320	241	1,561	1,555	35	1,590	1,653	---	1,653	---	267	267	839	110	949	****422	196	618	6,638
Cowlitz Fish Co.	Kelso, Wash.	---	497	99	596	1,814	97	1.911	29	---	29	51	6	57	---	---	---	---	---	---	2,593
New England Fish Co.	Astoria, Ore. Chinook, Wash.	---	1,111	---	1,111	1,417	---	1,417	923	102	1,025	118	---	118	12	---	12	---	---	---	3,683
Point Adams Pkg. Co.	Hammond, Ore.	677	3,770	565	5,012	2,552	64	2,616	3,385	2,333	5,718	303	552	855	987	56	1,043	974	1,157	2,131	17,375
Portland Fish Co.	Portland, Ore.	---	2,154	197	2,351	1,403	65	1,468	1,645	2,424	4,069	---	141	141	---	720	720	127	99	226	8,975
Union Fishermen's Co-op	Astoria, Ore.	899	2,080	1,967	4.946	3,966	935	4.901	222	638	860	---	460	460	---	22	22	206	797	1,003	12,192
TOTAL		1,567	26,249	4,773	32,598	22,978*	1,438	24,416	***11,524	12,920	24,444	1,112	2,177	3,289	1,838	912**	2,750	2,032	5,323	7,355	94,852

*Includes 260 cases packed in Talls.
**Includes 76 cases Pink Salmon.
***Includes 687 cases packed in Talls.
****Canned in Oregon

Bonneville Dam Salmon Escapement by Months

SPECIES	March	April	May	June	July	August	September	October	November	TOTAL
1959										
Chinook	182	26,944	34,007	39,581	49,371	24,945	168,187	1,643	168	345,028
Steelhead	219	746	1,236	2,562	60,549	38,417	23,579	1,540	178	129,026
Blueback	---	2	153	10,155	75,325	906	14	5	---	86,560
Silver	---	---	---	---	---	122	2,551	22	---	2,695
Chum	---	---	---	---	---	---	8	130	768	906
Pink	---	---	---	---	---	2	18	2	---	22
TOTAL	401	27,692	35,396	52,298	185,245	64,392	194,357	3,342	1,114	564,237
1960										
Chinook	184	37,064	32,349	65,247	19,923	22,719	76,327	2,012	224	256,049
Steelhead	412	904	1,090	4,314	44,026	33,571	28,058	1,090	211	113,676
Blueback	---	---	4	41,758	17,615	321	15	---	---	59,713
Silver	---	---	---	---	---	538	2,502	224	4	3,268
Chum	---	---	---	---	---	---	---	291	735	1,026
TOTAL	596	37,968	33,443	111,319	81,564	57,149	106,902	3,617	1,174	433,732
1961										
Chinook	476	72,526	25,693	41,302	25,159	22,675	90,688	6,206	347	285,072
Steelhead	374	1,161	692	2,246	44,379	41,237	47,409	3,121	659	141,278
Blueback	---	3	22	7,960	9,059	56	9	4	---	17,113
Silver	---	---	---	---	---	277	2,867	6	6	3,156
Chum	---	---	---	---	---	---	---	443	654	1,097
Pink	---	---	---	---	---	---	11	---	1	12
TOTAL	850	73,690	26,407	51,508	78,597	64,245	140,984	9,780	1,667	447,728

Source: United States Army Corps of Engineers

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COLUMBIA RIVER CANNED SALMON PACK

Salmon canning on the Columbia River commenced in 1866, with a pack of about 4,000 cases valued at $64,000; but no segregation by species is available prior to 1889. Production increased rapidly to a peak of 629,400 cases in 1883, valued at $3,147,000; then fell to 356,000, valued at $2,124,000, in 1887; the average output for intervening years being 351,091 cases, valued at $2,066,227.

YEAR	# of Can-neries	CHINOOK		BLUEBACK		SILVERSIDE		CHUM or KETA		STEELHEAD TROUT		TOTAL		YEAR
		Cases	Value	Cases	Value	Cases	Value	Cases	Value	Cases	Value	Cases	Value	
1888	28	...	...	...	...	...	...	...	...	...	...	372,477	$2,234,862	1888
1889	21	266,697	$1,600,182	17,797	$101,051	...	...	...	...	25,391	$108,587	309,885	1,809,820	1889
1890	21	335,604	1,946,087	57,345	290,069	...	...	...	...	42,825	171,300	435,774	2,407,456	1890
1891	22	353,907	2,038,566	15,482	284,242	...	...	...	...	29,564	118,156	398,953	2,440,964	1891
1892	24	344,267	1,996,388	66,547	372,909	4,176	$20,880	...	...	72,348	288,892	487,338	2,679,069	1892
1893	24	288,773	1,559,374	30,459	152,295	29,107	116,428	2,311	$6,933	65,226	260,904	415,876	2,095,934	1893
1894	24	351,106	1,896,976	43,814	224,430	42,758	171,032	...	...	52,422	209,688	490,100	2,501,126	1894
1895	24	444,909	2,428,658	18,015	86,523	99,601	329,683	22,493	62,591	49,678	203,542	634,696	3,110,997	1895
1896	24	370,943	1,804,511	16,983	81,518	44,108	141,145	...	...	49,663	198,652	481,697	2,261,826	1896
1897	22	432,753	1,804,221	12,972	51,888	60,850	197,762	...	...	46,146	165,440	552,721	2,219,311	1897
1898	23	329,566	1,490,394	66,670	300,015	65,431	222,465	...	...	26,277	60,352	487,933	2,073,226	1898
1899	17	255,824	1,458,175	23,969	134,723	29,608	112,055	11,379	33,836	11,994	39,186	332,774	1,777,975	1899
1900	16	262,392	1,821,258	13,162	92,184	44,925	202,163	17,696	63,706	20,597	102,985	358,772	2,282,296	1900
1901	...	...	...	...	...	...	...	...	...	...	...	390,183	1,942,660	1901
1902	14	270,580	1,428,743	17,037	86,465	10,532	44,732	10,401	41,604	8,593	42,965	317,143	1,644,509	1902
1903	16	301,762	1,610,614	8,383	42,867	12,181	49,869	10,000	37,500	7,251	36,255	339,577	1,777,105	1903
1904	20	320,378	1,944,690	12,911	78,048	31,254	118,357	20,693	52,691	9,868	48,892	395,104	2,242,678	1904
1905	19	327,106	1,962,636	7,768	46,608	26,826	114,011	25,751	65,206	9,822	49,110	397,273	2,237,571	1905
1906	19	311,334	1,868,007	7,816	54,712	41,446	124,338	27,802	69,505	6,500	32,500	394,898	2,149,062	1906
1907	19	258,433	...	5,504	...	31,757	...	22,556	...	5,921	...	324,171	1,763,490	1907
1908	14	210,096	...	8,581	...	31,432	...	16,884	...	10,726	...	253,341	1,380,708	1908
1909	15	162,131	1,203,546	27,908	214,561	42,178	185,070	24,542	57,115	17,283	99,796	274,087	1,760,088	1909
1910	15	244,285	1,882,137	6,234	34,287	68,922	363,688	66,538	232,883	5,436	31,203	391,415	2,544,198	1910
1911	15	405,862	2,204,185	5,988	47,904	79,416	549,478	53,471	203,198	8,594	47,399	543,331	3,052,164	1911
1912	15	220,317	1,988,526	8,210	85,384	31,842	177,248	18,699	46,590	6,958	22,108	285,666	2,319,856	1912
1913	15	192,116	1,664,670	11,152	93,677	40,969	175,412	13,303	29,486	8,939	49,142	266,479	2,012,387	1913
1914	17	289,464	2,573,502	35,311	376,924	69,769	380,666	49,285	205,541	10,792	59,356	454,621	3,595,989	1914
1915	19	406,486	3,694,361	5,459	56,707	33,336	173,234	86,530	251,632	26,723	129,358	558,534	4,305,292	1915
1916	20	395,166	3,572,203	3,790	27,288	52,084	335,114	77,766	307,483	18,999	118,987	547,805	4,361,075	1916
1917	20	403,637	5,023,529	7,968	111,552	64,299	700,680	53,659	386,596	23,783	292,538	555,218	6,530,939	1917
1918	20	400,952	5,222,983	37,833	605,328	98,145	1,072,843	29,846	215,669	24,605	350,071	591,381	7,466,924	1918
1919	21	392,125	5,455,550	7,268	145,360	90,728	1,142,767	75,493	541,989	14,414	205,254	580,028	7,490,920	1919
1920	22	420,467	5,661,580	2,617	62,808	27,024	257,806	18,792	99,564	12,645	116,859	481,545	6,198,617	1920
1921	20	267,582	3,761,321	6,045	120,900	34,381	233,372	4,821	19,791	10,142	68,266	323,241	4,203,649	1921
1922	23	237,230	3,724,393	30,743	614,860	90,437	633,935	8,844	47,130	24,920	186,675	392,174	5,206,993	1922
1923	23	289,586	4,967,657	38,309	766,180	101,554	673,954	25,508	135,168	25,968	187,965	480,925	6,730,924	1923
1924	22	293,716	4,508,236	7,366	129,840	112,308	992,865	57,748	303,356	29,734	285,107	500,872	6,219,404	1924
1925	21	250,809	5,423,129	5,650	106,220	113,554	1,488,855	55,812	272,398	14,637	177,866	540,452	7,468,468	1925
1926	21	295,302	4,744,131	21,736	434,720	97,142	1,027,597	32,853	181,216	32,690	356,418	479,723	6,744,064	1926
1927	22	339,446	5,559,202	6,887	147,378	74,879	585,816	68,449	425,240	30,148	311,070	519,809	7,028,705	1927
1928	24	251,404	4,355,218	4,814	100,131	49,136	478,355	124,953	747,619	16,339	222,139	446,646	5,903,462	1928
1929	21	242,938	4,234,214	10,072	181,296	90,684	917,561	54,619	314,928	23,804	257,025	422,117	5,905,024	1929
1930	21	281,346	4,092,810	9,823	194,460	110,430	1,156,042	11,371	43,324	16,535	171,541	429,505	5,658,177	1930
1931	20	294,798	3,754,929	4,125	66,000	39,268	247,878	3,518	11,754	11,990	110,429	353,699	4,191,000	1931
1932	15	216,511	2,023,390	2,795	33,540	46,492	280,853	17,261	44,879	13,132	91,924	296,191	2,474,586	1932
1933	14	251,157	2,719,303	6,921	96,894	36,430	263,190	24,398	107,351	17,805	142,440	336,711	3,329,178	1933
1934	13	251,068	2,630,152	6,869	82,428	65,428	536,731	24,455	92,608	14,901	121,000	362,721	3,462,919	1934
1935	10	205,870	2,479,450	1,302	17,619	95,184	725,868	15,495	59,499	14,888	122,846	332,739	3,405,282	1935
1936	11	220,188	2,964,058	9,837	137,718	36,541	303,263	30,597	110,149	19,282	317,867	316,445	3,833,055	1936
1937	11	291,343	4,256,819	7,526	126,436	69,801	725,996	30,592	138,309	17,568	189,734	416,830	5,437,294	1937
1938	10	173,892	2,707,267	13,889	260,369	67,257	630,364	37,704	143,275	15,248	152,480	307,990	3,893,755	1938
1939	10	207,595	3,336,206	5,301	102,359	69,082	730,549	15,201	75,416	25,293	320,025	322,472	4,666,141	1939
1940	11	244,570	3,785,681	23,974	471,530	59,737	623,681	25,282	125,420	33,436	373,514	386,999	5,379,826	1940
1941	11	328,609	5,558,254	33,070	661,400	35,727	481,834	83,144	572,994	33,162	453,502	513,712	7,727,984	1941
1942	12	274,750	5,692,929	23,256	625,230	26,541	497,070	118,051	911,538	21,803	429,678	464,401	8,156,445	1942
1943	11	130,373	3,094,505	2,880	77,586	5,707	61,065	12,439	112,421	16,261	323,874	167,660	3,669,451	1943
1944	10	163,047	3,714,591	758	20,342	12,210	137,072	1,525	11,590	19,222	375,838	196,762	4,259,433	1944
1945	8	132,014	3,095,228	112	3,001	22,154	244,060	1,032	8,848	19,314	363,068	*175,670	3,723,456	1945
1946	11	159,872	5,940,740	9,726	369,588	6,883	206,490	§15,617	247,392	17,373	510,720	§209,471	7,274,939	1946
1947	10	250,318	8,613,000	15,079	664,000	42,789	1,278,000	17,121	252,000	21,999	650,000	347,306	11,457,000	1947
1948	12	235,310	9,342,000	3,339	147,000	39,425	1,099,000	26,201	498,000	19,977	615,000	324,242	11,701,000	1948
1949	12	133,347	3,682,000	**6,630	225,000	16,740	415,000	12,386	186,000	9,019	221,000	178,122	4,729,000	1949
1950	11	136,635	4,964,201	3,630	146,687	29,507	939,296	12,952	234,457	10,266	360,830	192,990	6,645,471	1950
1951	10	143,046	5,497,305	4,552	186,543	29,099	841,234	11,566	192,850	14,862	469,615	203,125	7,187,547	1951
1952	9	95,353	3,506,181	9,824	413,774	29,701	875,380	13,759	214,837	18,979	612,987	167,616	5,623,159	1952
1953	8	97,320	3,267,303	3,014	127,791	24,219	676,237	9,775	130,062	19,420	616,621	153,199	4,823,332	1953
1954	8	71,993	2,550,257	8,485	336,212	12,670	367,000	12,530	190,484	13,379	458,303	119,057	3,902,256	1954
1955	8	117,782	4,392,455	3,010	131,890	20,254	667,659	*6,774	126,875	13,737	462,857	*161,557	5,781,736	1955
1956	8	112,076	4,328,650	19,346	845,066	22,031	656,182	***5,497	130,233	8,171	295,294	167,121	6,255,425	1956
1957	8	87,420	3,738,912	8,496	470,061	28,725	1,024,847	§5,770	121,542	7,605	287,028	138,016	5,642,390	1957
1958	7	82,786	3,714,465	44,129	2,144,087	9,917	370,072	6,113	109,862	6,313	229,786	149,258	6,568,272	1958
1959	10	70,149	2,942,503	17,069	823,850	14,931	586,739	6,250	127,751	9,847	356,835	118,246	4,837,678	1959
1960	8	50,285	2,328,334	8,650	496,451	5,202	244,344	2,459	56,166	6,174	275,303	72,770	3,400,598	1960
1961	8	57,014	3,420,840	3,289	197,340	24,444	1,222,200	+2,750	66,000	7,355	367,750	94,852	5,274,130	1961
Aver.	8	92,821	3,626,636	12,657	597,572	19,675	630,969	8,049	140,066	11,849	406,463	145,051	5,401,706	Aver.

NOTES: "Average" is for the ten years preceding the current year. Figures for the last year in this table are from PACIFIC FISHERMAN'S compilation. Those for previous years have been revised from official data. *Includes 1,044 cases of Pinks canned from Puget Sound Fish. **Mostly Quinault River Bluebacks. ***Includes 588 cases of Pinks §Includes 860 cases of Pinks. +Includes 76 cases of Pinks.

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SEAFOOD BROKERS

ported in large degree by Chinooks spawned on the Columbia.

Valiant efforts are being made to find means by which rivers can be dammed without destroying the salmon—and gains have been made; but the increasing construction of barriers more than keeps pace with the advances in protecting migratory species.

- Vigorous efforts are being made to secure larger and more effective escapement of Chinooks and Steelheads also, not only through the commercial fishery but also through the increasing upstream sport fishery developing for these species virtually to their spawning grounds.

- Salmon canning in the coastal area of the Pacific Northwest, extended to include northern California to Humboldt Bay, in 1961 produced only 1,605 cases of salmon, all packed by Mohawk Packing Co. at Moclips, Wash. Of this pack, 1,137 cases were Quinault Sockeyes, usually called Bluebacks in the area, taken by the Indians on the Quinault Reservation.

Salmon conditions in the coastal districts of Washington and Oregon are distinctly better than this scant pack would indicate, but it is difficult to distinguish the actual production of the coastal areas because of the fact that most of the salmon taken in those waters, whether by trollers at sea or inside such rivers as are open, are transported to the Columbia River for canning.

CANNED SALMON PACK OF COASTAL AREAS

Year	WASHINGTON					OREGON				California	GRAND TOTAL Full Cases	Year
	Blueback	Chinook	Silver & Steelhead	Chum & Pink	Total Full Cases	Chinook	Silver & Steelhead	Chum	Total Full Cases	TOTAL Full Cases		
1919	1,244	5,029	17,174	39,995	63,442	26,089	43,114	7,081	76,284	22,766	162,492	1919
1920	235	921	405	26	1,587	30,571	4,490	...	35,061	21,055	57,703	1920
1921	2,590	2,010	4,897	5,281	14,778	15,632	122	...	15,754	10,376	40,908	1921
1922	26,491	2,573	13,354	10,939	53,357	12,270	11,769	2,248	26,287	9,700	89,344	1922
1923	10,454	1,794	5,172	38,523	55,943	10,526	22,606	14,279	47,411	6,000	109,354	1923
1924	6,778	1,506	5,493	32,760	46,537	16,351	30,449	14,603	61,403	12,936	120,876	1924
1925	4,821	3,810	6,679	35,342	53,276	22,404	18,872	14,410	55,686	22,339	131,301	1925
1926	2,720	2,441	3,182	17,377	25,720	19,130	7,033	4,838	31,001	11,537	68,258	1926
1927	5,260	4,195	1,983	25,452	36,890	17,456	13,390	181	48,619	15,585	101,094	1927
1928	2,000	52	415	34,109	37,031	5,411	8,136	5,500	19,047	4,237	60,515	1928
1929	4,449	213	1,158	35,699	41,519	4,700	2,313	8,047	15,060	2,774	59,353	1929
1930	21,536	49	2,160	11,846	35,519	11,252	981	...	12,233	5,171	52,995	1930
1931	8.476	61	501	11,225	20,263	4,234	...	8,600	12,834	12,280	45,377	1931
1932	14,263	308	1,152	22,236	37,959	8,524	...	...	8,524	780	47,263	1932
1933	6,754	845	424	7,735	15,758	7,150	...	500	7,650	2,149	25,557	1933
1934	3,323	2,344	1,453	15,370	22,490	4,100	...	2,000	6,100	820	29,410	1934
1935	6,217	3,685	10,009	7,351	27,262	2,500	...	2,400	4,900	874	33,036	1935
1936	705	1,137	1,883	16,038	19,763	...	...	9,500	9,500	...	29,263	1936
1937	2,865	176	82	7,932	11,055	2,400	...	...	2,400	147	13,602	1937
1938	1,559	...	...	13,173	14,732	...	...	...	...	...	14,732	1938
1939	...	...	...	6,381	6,381	...	...	2,200	2,200	...	8,581	1939
1940	138	23	504	9,142	9,807	647	643	1,000	2,290	...	12,097	1940
1941	24	..	. .	27,428	27,452	1,000	2,500	5,400	8,900	1,125	37,477	1941
1942	1,235	...	...	17,492	18,727	1,450	200	9,000	10,650	...	29,377	1942
1943	...	100	402	5	507	1,038	...	...	1,038	767	2,312	1943
1944	...	750	161	132	1,043	1,961	2,567	...	4,528	864	6,435	1944
1945	...	4,005	2,096	5,287	11,388	...	...	...	...	2,755	14,143	1945
1946	3,694	2,398	5,185	17,225	28,502	16,104	4,806	663	21,573	5,034	55,109	1946
1947	12,450	3,014	13,023	10,060	38,547	7,383	8,379	...	15,762	13,917	68,226	1947
1948	4,021	1,805	12,060	8,642	26,528	7,553	7,052	...	14,605	11,681	52,814	1948
1949	7,577	419	3,856	6,285	18,137	827	55	...	882	...	19,019	1949
1950	3,969	2,755	8,034	12,902	27,660	3,190	4,817	...	8,007	1,801	35,667	1950
1951	2,643	1,495	4,151	12,597	20,896	500	50	...	550	707	22,153	1951
1952	877	1,807	5,267	15,000	22,951	184	1,011	...	1,195	2,042	26,188	1952
1953	455	642	320	11,141	12,558	...	...	...	...	436	12,994	1953
1954	4,240	5	58	11,755	16,058	...	...	...	...	2,162	18,520	1954
1955	2,798	784	442	7,667	11,691	...	...	...	...	847	12,538	1955
1956	5,076	2,637	163	2,389	10,265	...	...	...	...	694	21,524	1956
1957	2,634	165	199	1,194	4,192	...	...	...	...	2,174	6,366	1957
1958	837	755	440	5,182	7,214	...	...	...	...	1,005	8,219	1958
1959	575	637	1,004	4,878	7,094	...	120	...	120	...	14,308	1959
1960	1,019	406	94	991	2,510	...	...	...	...	...	2,510	1960
1961	1,137	...	...	468	1,605	...	...	...	...	...	1,605	1961
Average	2,094	912	1,205	7,280	11,491	68	118	1	186	1,007	14,481	Average

NOTE: All figures indicate "Full Cases" on a common basis of 48 lbs. net, equivalent to 96 Halves or 192 Quarters. For some years a few Puget Sound Pinks are included with Chums in the Washington Coast pack. A few Steelheads are sometimes canned in these areas. Where they occur, they are included with Silvers. The California pack consists almost entirely of Chinooks, but sometimes includes a few Silvers. "Average" is for the ten years preceding the current year.

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TUNA

Another New Record

- With nation-wide production reaching 15,611,171 cases, a gain of 376,000 cases, American tuna canning set a new record in 1961.

Counting imports, the Tuna Research Foundation estimates that Americans consumed 19,300,000 cases of tuna in 1961, or 5.2 cans per capita; or approximately 10% of the United States per capita consumption of fish in all forms: canned, cured, frozen and fresh.

California, with production of 10,634,684 cases, accounted for more than two-thirds of the national tuna canning; but the Atlantic and Gulf coasts, together with such insular centers as Hawaii, Puerto Rico and American Samoa rose rapidly in importance, producing 3,776,100 cases during the year.

Tuna canning in the Pacific Northwest declined somewhat, as did that of California, due to the disappointingly short run of local Albacore.

The proportion of White Meat tuna in the pack of 1961 was substantially below the usual level, due to the reduced domestic Albacore catch and the relative scarcity of Albacore available for import.

In the Light Meat tuna catch Yellowfin rose to greater dominance than ever before as result of the increasing proportion of the American tuna catch taken by high seas purse seines, with their greater effectiveness on Yellowfin.

- Imports of canned tuna-in-brine, which account for the great majority of tuna brought into the United States from other countries, reached 2,678,700 standard cases of 48 halves, which was only 41,300 under the quota, at which the tariff advances to 25% ad valorem.

Imports during 1961 represented an increase of 11.9% over 1960.

- Tuna landings in California during the last two months of 1961 were relatively disappointing, but early in 1962 the distant waters seiners reported much improved fishing and the year started strongly.

This same pattern of production apparently prevailed in deliveries to Puerto Rico also, as most of the supplies to the island's canneries thus far have come from Pacific fishing areas through the Panama Canal.

Pacific Northwest local Albacore fishing fell off sharply in 1961, dropping from slightly over 2,000 tons in 1960 to 1,228 in 1961. These domestic landings were supplemented by imports of about 17,000 tons, of which approximately 12,500 tons were Albacore.

Domestic tuna deliveries in the Hawaiian Islands in 1961 were approximately 11,400,000 lbs., about 1,600,000 lbs. above the average for the period from 1948 to 1960. Here also the local production was heavily supplemented by imports, principally of exceptionally large, fine Albacore from the New Hebrides.

Atlantic Ocean tuna fishing was quite disappointing in 1961, particularly in the eastern Equatorial area, where the catch of Yellowfin proved particularly short. At the end of the year the Atlantic Ocean tuna fishery was largely concentrated on the Albacore fishing ground in the western Atlantic off the coast of South America, where production was better, although below that of 1960.

1961 UNITED STATES TUNA PACK

REGION	Albacore Standard Cases	Lightmeat Tuna Standard Cases	TOTAL Standard Cases	REGION
California:				California:
San Diego	170,488	1,709,055	1,879,543	San Diego
Los Angeles Harbor	1,255,787	6,800,486	8,056,273	Los Angeles Harbor
San Francisco area	213,123	485,745	698,868	San Francisco area
TOTAL California	1,639,398	8,995,286	10,634,684	TOTAL California
Oregon and Washington	766,941	433,446	1,200,387	Oregon and Washington
Atlantic and Gulf Coasts, Hawaii, Puerto Rico and American Samoa	1,244,000	2,532,100	3,776,100	Atlantic and Gulf Coasts, Hawaii, Puerto Rico and American Samoa
TOTAL U. S. TUNA	3,650,339	11,960,832	15,611,171	TOTAL U. S. TUNA

1961 - IMPORTS OF CANNED TUNA TO U. S.

(Pounds)

Countries		Oct. '60	Nov. '60	Dec. '60	Jan.	Feb.	March	April	May	June	July	August	Sept.	TOTAL
JAPAN -	TOTAL	3,220,000	3,574,000	3,988,000	2,041,000	3,121,000	4,428,000	2,964,000	3,127,000	3,448,000	4,409,000	5,837,000	4,236,000	44,393,000
Albacore:	Oil	---	11,000	15,000	---	13,000	42,000	---	---	---	---	---	---	81,000
	Brine	1,120,000	1,081,000	1,407,000	963,000	1,934,000	2,837,000	2,485,000	2,000,000	2,195,000	3,326,000	3,920,000	2,246,000	25,514,000
Other Tuna:	Brine	2,100,000	2,482,000	2,566,000	1,078,000	1,174,000	1,549,000	479,000	1,127,000	1,253,000	1,083,000	1,917,000	1,990,000	18,798,000
PERU -	TOTAL	---	---	---	---	---	---	68,000	70,000	70,000	328,000	164,000	142,000	842,000
Lightmeat:	Oil	---	---	---	---	---	---	---	---	---	---	---	---	---
	Brine	---	---	---	---	---	---	68,000	70,000	70,000	328,000	164,000	142,000	842,000
PORTUGAL -	TOTAL	155,000	325,000	126,000	250,000	15,000	356,000	114,000	151,000	348,000	263,000	465,000	180,000	2,748,000
Lightmeat:	Oil	---	---	---	---	---	---	---	---	---	---	---	---	---
	Brine	155,000	325,000	126,000	250,000	15,000	356,000	114,000	151,000	348,000	263,000	465,000	180,000	2,748,000
ECUADOR -	TOTAL	---	---	---	---	---	---	---	400,000	350,000	258,000	323,000	440,000	1,771,000
Lightmeat:	Oil	---	---	---	---	---	---	---	---	---	---	---	---	---
	Brine	---	---	---	---	---	---	---	400,000	350,000	258,000	323,000	440,000	1,771,000
SPAIN -	TOTAL	15,000	125,000	44,000	45,000	75,000	30,000	59,000	21,000	14,000	17,000	23,000	95,000	563,000
Albacore:	Oil	---	---	---	---	---	---	---	---	---	---	---	---	---
	Brine	15,000	111,000	44,000	45,000	75,000	30,000	59,000	21,000	14,000	17,000	23,000	95,000	549,000
Other Tuna:	Oil	---	---	---	---	---	---	---	---	---	---	---	---	---
	Brine	---	14,000	---	---	---	---	---	---	---	---	---	---	14,000
OTHERS -	TOTAL	607,000	499,000	410,000	613,000	533,000	535,000	343,000	418,000	559,000	297,000	370,000	465,000	5,649,000
Albacore:	Oil	5,000	5,000	6,000	3,000	61,000	5,000	34,000	36,000	71,000	4,000	19,000	47,000	296,000
	Brine	---	60,000	90,000	38,000	85,000	123,000	108,000	150,000	112,000	109,000	51,000	204,000	1,130,000
Other Tuna:	Oil	10,000	4,000	9,000	6,000	3,000	---	---	---	---	---	---	---	32,000
	Brine	592,000	430,000	305,000	566,000	384,000	407,000	201,000	232,000	376,000	184,000	300,000	214,000	4,191,000

NORTH PACIFIC ALBACORE TUNA LANDINGS

(POUNDS)

OREGON			YEAR	WASHINGTON					Combined Oregon and Washington TOTALS
Columbia River	South of Columbia	Oregon TOTAL		Puget Sound	Grays Harbor	Willapa Harbor	Columbia River	Washington TOTAL	
5,679,942	2,162,263	7,842,205	1948	637,822	5,050,164	251,165	511,382	6,450,533	14,292,738
4,553,180	1,773,760	6,326,940	1949	943,811	3,231,194	112,222	146,674	4,433,901	10,760,841
4,056,233	1,434,284	5,490,517	1950	503,953	3,099,890	209,104	473,328	4,286,275	9,776,792
1,982,583	933,962	2,916,545	1951	133,989	333,049	54,353	1,098	521,489	3,438,034
1,400,060	1,185,294	2,585,354	1952	72,310	86,973	17,780	---	177,063	2,762,417
226,650	546,862	773,512	1953	19,488	17,346	---	---	36,834	809,346
303,550	152,808	456,358	1954	129,737	21,588	---	---	151,325	607,683
444,458	58,852	503,304	1955	200,000	---	---	---	200,000	703,304
3,099,514	554,007	3,653,521	1956	209,388	239,270	2,457	178,609	629,728	4,283,249
1,785,991	915,516	2,701,507	1957	186,147	61,621	---	109,636	357,404	3,058,911
5,510,875	4,243,094	9,753,969	1958	340,240	833,219	2,323	327,638	1,503,420	11,257,389
6,509,535	4,072,410	10,581,945	1959	364,146	1,785,106	6.522	805,085	2,960,859	13,542,804
3,036,507	465,229	3,501,736	1960	42,142	158,440	---	325,143	525,725	4,027,461
N. A.	N. A.	1,991,720	1961	133,336	295,921	---	27,023	456,280	2,448,000

NOTE: Oregon deliveries of domestic Albacore in 1961 partly estimated. Segregation of landings between Columbia River and coastal ports not available.

1961 - IMPORTS OF FRESH AND FROZEN TUNA TO U.S.

(POUNDS)

Fresh - Frozen	Oct. '60	Nov. '60	Dec. '60	Jan.	Feb.	March	April	May	June	July	August	Sept.	TOTAL
JAPAN - Total	12,300,000	11,373,000	10,875,000	9,214,000	12,150,000	13,906,000	8,773,000	10,474,000	5,032,000	8,970,000	9,660,000	8,578,000	121,305,000
Albacore	5,912,000	6,153,000	5,720,000	5,106,000	5,009,000	6,908,000	3,796,000	2,620,000	815,000	1,832,000	3,246,000	2,487,000	49,604,000
Other Tuna	6,388,000	5,220,000	5,155,000	4,108,000	7,141,000	6,998,000	4,977,000	7,854,000	4,217,000	7,138,000	6,414,000	6,091,000	71,701,000
PERU - Lightmeat	4,293,000	3,106,000	1,836,000	230,000	473,000	1,030,000	---	---	5,398,000	1,064,000	---	1,366,000	18,796,000
ECUADOR - Lightmeat	340,000	---	1,591,000	320,000	---	---	---	600,000	3,433,000	2,289,000	---	---	8,573,000
OTHERS - Total	5,334,000	4,066,000	2,250,000	7,024,000	8,431,000	3,968,000	6,846,000	6,976,000	5,733,000	5,141,000	4,996,000	5,862,000	66,627,000
Albacore	1,557,000	1,086,000	665,000	4,365,000	4,071,000	424,000	704,000	1,173,000	1,601,000	965,000	1,195,000	2,592,000	20,398,000
Other Tuna	3,777,000	2,980,000	1,585,000	2,659,000	4,360,000	3,544,000	6,142,000	5,803,000	4,132,000	4,176,000	3,801,000	3,270,000	46,229,000
Total Albacore	7,469,000	7,239,000	6,385,000	9,471,000	9,080,000	7,332,000	4,500,000	3,793,000	2,416,000	2,797,000	4,441,000	5,079,000	70,002,000
Total Lightmeat	14,798,000	11,306,000	10,167,000	7,317,000	11,974,000	11,572,000	11,119,000	14,257,000	17,180,000	14,667,000	10,215,000	10,727,000	145,299,000
GRAND TOTAL	22,267,000	18,545,000	16,552,000	16,788,000	21,054,000	18,904,000	15,619,000	18,050,000	19,596,000	17,464,000	14,656,000	15,806,000	215,301,000

U. S. Tuna Pack other than Continental Pacific States

(Hawaii, Samoa, Puerto Rico, Atlantic and Gulf States)
In Standard Cases

YEAR	ALBACORE				LIGHTMEAT				TOTAL	YEAR
	Solid	Chunks	Flakes	Total	Solid	Chunks	Flakes	Total		
1955	**	**	**	**	276,829*	343,658*	222,225*	842,712*	842,712	1955
1956	273,262	28,682	19,527	321,471	142,885	348,032	144,035	634,952	956,423	1956
1957	438,035	70,433	44,109	552,577	38,190	693,262	***	731,452	1,284,029	1957
1958	464,537	**	68,163	532,700	110,204	1,013,236	212,468	1,335,908	1,868,608	1958
1959	460,563	**	105,563	566,126	105,154	1,546,461	184,380	1,835,995	2,402,121	1959
1960	621,420	389,768	131,709	1,142,897	85,032	1,663,097	224,742	1,972,871	3,115,768	1960

*Includes Albacore. **Included with Lightmeat. ***Included with Chunks.

- Tuna prices generally moved upward in 1961. This applies as well to the price paid the fisherman and that charged the consumer, although the price for raw fish advanced more percentagewise than did the product selling figures.

In California there were three price advances in 1961, and another as 1962 opened.

With the opening of 1962 Japan sold two large blocks of tuna aggregating 260,000 cases of White Meat and 230,000 cases of Light Meat to the United States at prices 30¢ per case for Albacore and 10¢ per case for Light Meat above the last sales of 1960. This left the prevailing price f.o.b. Japan for cases of 48 halves at $9.95 for White Meat and $7.70 for Light Meat, both in brine.

- A trend of notable character manifest in the United States tuna business in 1961 was announcement by two of the largest factors in American fish canning that they were entering Atlantic tuna canning.

Thus California Packing Corporation, usually regarded as the largest food canner in the world, is re-entering tuna packing with a new cannery now under construction at Mayaguez, Puerto Rico.

Castle & Cooke, Ltd., Honolulu, announced construction of a tuna cannery at Cambridge, Maryland, by its subsidiary Maryland Tuna Corporation. Operations will be under the management of another subsidiary, Bumble Bee Seafoods, Inc., third American tuna canner.

American Samoa, Puerto Rico and Hawaii
Tuna Cannery Receipts

SPECIES/SOURCE	Dec. 1961	Jan. - December	
		1961	1960
Albacore:			
Domestic-caught	---	---	---
Imported & Foreign-caught	1,918	23,799	18,676
Total	1,918	23,799	18,676
Skipjack:			
Domestic-caught	140	9,211	6,065
Imported & Foreign-caught	145	9,886	4,234
Total	285	19,097	10,299
*Yellowfin:			
Domestic-caught	930	10,329	7,609
Imported & Foreign-caught	174	12,372	14,171
Total	1,104	**22,701	21,780
Total Tuna:			
Domestic-caught	1,070	19,540	13,672
Imported & Foreign-caught	2,237	46,057	37,081
Grand Total	3,307	65,597	50,753

*Includes bigeye tuna. **Includes 10,523 tons caught in the Eastern Pacific, and 9,554 tons caught in Atlantic Ocean fishing.

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CALIFORNIA TUNA—1961

Price and Tonnage Rises

● Year 1961 was as eventful as any the California tuna industry has ever known.

Count these among the striking developments:

1. Ex-vessel price of tuna rose on four occasions in 1961, and again Jan. 2, 1962.
2. California Yellowfin tuna landings set a new all-time record at 100,189 tons.
3. Recommendation for a catch limit on Yellowfin from the Eastern Pacific was voted by the Inter-American Tropical Tuna Commission.
4. The four largest American tuna fishing vessels were put into service.
5. The first new long-range tuna seiner to be built for that trade, as distinguished from converted vessels, entered into service.

● There were new standards of size in tuna vessels as well as in tuna landings.

The biggest American vessel ever to fish for tuna went to sea in October, 1961. This was the *Nautilus*, owned by the veteran clipper skipper Eddie Madruga, Joe Madruga, Frank Gonsalves and their associates, of San Diego. The *Nautilus*, an all-steel former Navy mine-layer, measures 189' in length, and is said to have a capacity of 800 tons of frozen tuna in her holds.

She was converted by Campbell Machine, Inc., of San Diego, in one of the most complicated and colossal jobs of fishing vessel converting ever done. This involved removing her complicated military equipment, including the engine, reducing the huge vessel almost to an empty hull, then adding power and refrigeration equipment, including insulating her capacious holds, that makes her an efficient industrial machine for catching and transporting fish.

The conversion job took months, and was done under the constant supervision of the three principal owners.

Second only to the *Nautilus* in size, and more revolutionary in design, was *Clipperton*, owned by Sverre Jangaard, one of the most enterprising and unconventional fishermen in the fleet. *Clipperton*, also a former military vessel, and also converted by Campbell Machine, has a capacity of about 600 tons of tuna, and was the first vessel to mount two powerblocks, fore and aft, and to fish mainly from the waist rather than over the stern.

On her maiden trip, *Clipperton* not only was hit by scarcity of fish but had some accidental equipment complications as well. Some modifications were made in her structure before she sailed on her second trip, but Capt. Jangaard's confidence in his fishing innovations was unshaken.

All-New Seiner

● *Royal Pacific*, 142' long, around 440 tons capacity, joined the tuna fleet in late summer. She is owned by Lou Brito, first San Diego clipper owner to convert his vessel to seine fishing, which he did with the *Southern Pacific* several years ago. *Royal Pacific* was built by J. M. Martinac Shipbuilding Corporation of Tacoma, Wash. Although conventional in design and gear, *Royal Pacific* does have some original features, for example a new, mechanical brailer that worked so successfully on the *Southern Pacific* that Capt. Brito had a similar one built for the new vessel. She also has welded aluminum bulwarks for-

1961 - Pacific Coast Frozen Tuna Imports by Months

(TONS)

AREAS AND GRADES	Nov. '60	Dec. '60	Jan. '61	Feb. '61	March	April	May	June	July	August	Sept.	Oct.	TOTAL
To California													
Albacore	1,646	2,122	2,986	1,690	1,782	1,419	747	302	242	268	1,164	1,673	16,041
Lightmeat, etc.	2,077	1,991	2,715	1,867	4,673	2,571	1,682	3,817	3,316	5,599	2,710	3,628	36,646
1960-61 Total	3,723	4,113	5,701	3,557	6,455	3,990	2,429	4,119	3,558	5,867	3,874	5,301	52,687
1959-60 Total	4,079	6,562	5,150	4,497	8,754	6,774	6,396	6,971	5,464	4,385	5,729	4,354	68,948
1958-59 Total	4,952	6,979	7,837	6,716	6,770	8,281	5,465	7,110	7,657	5,833	3,924	6,630	78,154
To Oregon & Washington													
Albacore	923	100	50	705	1,348	883	140	--	490	1,816	231	909	7,595
Lightmeat, etc.	95	53	58	--	308	9	418	30	1,108	1,160	141	220	3,600
1960-61 Total	1,018	153	108	705	1,656	892	558	30	1,598	2,976	372	1,129	11,195
1959-60 Total	984	1,643	2,143	1,047	762	279	155	1,454	2,083	1,601	1,067	2,348	15,566
1958-59 Total	682	1,515	470	350	633	400	334	17	77	1,625	1,118	657	7,878
Pacific Coast													
1960-61 Total	4,741	4,266	5,809	4,262	8,111	4,882	2,987	4,149	5,156	8,843	4,246	6,430	63,882
1959-60 Total	5,063	8,205	6,953	5,511	9,516	7,259	6,551	8,425	7,547	5,986	6,796	6,702	84,514
1958-59 Total	5,634	8,494	8,307	7,066	7,403	8,681	5,799	7,127	7,734	7,458	5,042	7,287	86,024

TUNA

Oregon and Washington Tuna Receipts, Domestic and Imported

(In tons as compiled by U. S. Bureau of Commercial Fisheries from U. S. Customs Officials)

YEAR	ALBACORE		BLUEFIN Imports	SKIPJACK Imports	YELLOWFIN Imports	TOTAL
	Domestic	Imports				
1961	*1,224	12,479	285	50	4,243	18,281
1960	4,110	9,603	216	414	4,206	18,549
1959	8,361	6,108	---	---	3,776	18,245

*Oregon landings partly estimated.

SAN DIEGO CANNED TUNA BY GRADES

YEAR & TYPE	Solid	Standard	Chunks	Grated & Flakes	Dark & Light	Tonno	Misc.	TOTAL
1951								
Lightmeat	872,560	101,909	1,444,755	530,229	2,678	58,042	4,991	3,015,164
Whitemeat	180,887	88,887	100,926	39,119	.....	......	.....	409,819
Yellowtail & Bonito	....	270	....	12,175	.....	......	.....	12,445
TOTAL	1,053,447	191,066	1,545,681	581,523	2,678	58,042	4,991	3,437,428
1952								
Lightmeat	475,181	26,455	902,647	344,532	.....	36,868	1,009	1,786,692
Whitemeat	309,319	....	225,255	109,774	.....	7,708	.....	652,056
Yellowtail & Bonito	....	80	3,035	31,117	.....	......	.....	34,232
TOTAL	784,500	26,535	1,130,937	485,423	.....	44,576	1,009	2,472,980
1953								
Lightmeat	492,617	56,386	1,123,132	368,405	3,810	44,134	2,858	2,091,342
Whitemeat	351,945	....	142,192	141,440	557	10,875	.....	647,009
Yellowtail & Bonito	....	68	14,114	55,684	.....	......	.....	69,866
TOTAL	844,562	56,454	1,279,438	565,529	4,367	55,009	2,858	2,808,217
1954								
Lightmeat	763,880	48,645	1,614,929	384,897	4,206	64,155	.....	2,880,712
Whitemeat	249,972	....	84,809	58,563	.....	......	142	393,486
Yellowtail & Bonito	33	3,346	1,201	43,829	.....	......	.....	48,409
TOTAL	1,013,885	51,991	1,700,939	487,289	4,206	64,155	142	3,322,607
1955								
Lightmeat	463,761	34,850	1,144,899	266,162	.....	42,186	.....	1,951,858
Whitemeat	243,998	601	23,720	41,537	.....	......	.....	309,856
Yellowtail & Bonito	....	24	34	2,160	.....	......	.....	2,218
TOTAL	707,759	35,475	1,168,653	309,859	.....	42,186	.....	2,263,932
1956								
Lightmeat	588,264	44,877	1,773,473	335,296	.....	58,135	4,314	2,804,359
Whitemeat	271,163	283	59,769	48,285	.....	......	504	380,004
Yellowtail & Bonito	....	....	30	2,486	.....	......	.....	2,516
TOTAL	859,427	45,160	1,833,272	386,067	.....	58,135	4,818	3,186,879
1957								
Lightmeat	493,786	25,273	1,436,988	329,541	.....	63,912	3,308	2,352,808
Whitemeat	254,913	312	131,511	70,591	.....	261	998	458,586
Yellowtail & Bonito	....	452	482	3,430	.....	.....	....	4,364
TOTAL	748,699	26,037	1,568,981	403,562	.....	64,173	4,306	2,815,758
1958								
Lightmeat	420,554	23,009	1,445,522	394,563	.....	55,852	68,228	2,407,728
Whitemeat	126,249	15	15,884	41,450	.....	165	252	184,015
Yellowtail & Bonito	....	....	3,565	4,373	.....	.....	....	7,938
TOTAL	546,803	23,024	1,464,971	440,386	.....	56,017	68,480	2,599,681
1959								
Lightmeat	284,528	6,953	1,123,704	236,507	.....	16,176	80,346	1,748,214
Whitemeat	71,225	94	23,865	16,863	.....	......	......	112,047
Yellowtail & Bonito	....	.....	....	103	.....	......	......	103
TOTAL	355,753	7,047	1,147,569	253,473	.....	16,176	80,346	1,860,364
1960								
Lightmeat	324,571	.....	693,492	184,967	.....	.....	......	1,203,030
Whitemeat	138,581	.....	52,602	35,444	.....	.....	384	227,011
Yellowtail & Bonito	......	.....	......	......	.....	.....	......	......
TOTAL	463,152	.....	746,094	220,411	.....	.....	384	1,430,041

ward, which give the bows a more pronounced flare than could be achieved with wood alone, and make for a dryer ship forward.

● Under construction before the end of 1961 was a huge steel seiner, 167′ in length, and like *Royal Pacific*, designed and built from the keel up for the new phase of tuna fishing. As yet unnamed at time of writing, and with her ownership still undisclosed, the vessel is designed to catch and carry 700 tons of frozen tuna at a trip.

She is being built by Tacoma Boatbuilding Co., which will also provide all of her deck machinery out of its Northern Line of winches, hoists, windlasses and blocks.

The vessel is conventional in its outward aspects, but will carry a house built of wood on a steel hull. The consideration here is basically habitability and the simplification of magnetic compass problems.

● Early in the 1961 season, the *Western King* and the *Western Ace*, sister ships each with capacity of around 630 tons, were converted and went fishing. The *King*, which sailed under command of Nick Trutanich, was converted by Harbor Boat & Yacht Co. of San Diego, and the *Ace*, whose managing owner is Harvey Petrich, was done over by Harbor Boat Building Co. of Terminal Island. Both *Westerns* are now based on Puerto Rico.

Besides the big new vessels, a number of tuna clippers were converted to purse seining during the year, bringing the combined tuna fleet almost to full conversion. Only a few vessels now remain as baitboats.

As the year ended, a new organization had been formed in San Diego to engage in the tuna fishing business. The principals were not experienced fishermen, but were forming an expert technical staff to operate two new vessels of the *Nautilus* class. One of the hulls had been towed to a Florida shipyard for conversion.

Ex-Vessel Prices Rise

● Four times during 1961, and again on January 2, 1962, the prices paid to boat-owners for tuna went up, until going prices were $260 per ton for Skipjack, $300 per ton for Yellowfin, and $280 for Bluefin—when you can get Bluefin. These are the highest prices for many a year, and reflect a number of factors in the industry, among which can be mentioned the world supply and price of tuna and the ever-rising consumption of canned tuna in the U. S., which can be credited mainly to the canners' advertising and merchandising effort, which has no equal in the seafood indus-

Shipments of Tuna Received in California

Year	Albacore	Yellowfin	Skipjack	Bluefin	Bigeye	Other	TOTAL
1944	2,535,547	72,859	899,862	...	...	...	3,508,268
1945	60,901	1,317,589	74,489	...	...	...	1,452,979
1946	...	817,987	210,687	...	...	...	1,028,674
1947	269,397	1,392,590	146,655	...	...	...	1,808,642
1948	1,141,747	...	364	168,180	...	...	1,310,291
1949	254,664	673,632	11,911	...	...	5,655	945,863
1950	4,378,420	7,961,748	3,251,118	107,878	...	40,000	15,739,164
1951	17,520,891	13,120,725	2,858,749	2,112	...	36,858	33,539,335
1952	22,525,248	7,141,589	4,157,441	...	...	2,306	33,826,584
1953	46,186,816	8,458,606	8,347,736	62,447	20,000	...	63,075,605
1954	38,466,383	29,701,898	15,707,756	771,147	1,249,937	3,901	85,901,022
1955	44,844,675	40,526,143	18,687,354	343,346	512,534	...	104,914,052
1956	20,322,775	54,604,513	16,165,120	162,875	668,082	...	91,923,365
1957	39,564,027	45,085,798	20,938,140	323,024	827,474	...	106,738,463
1958	27,485,321	93,979,964	25,303,518	242,820	5,386,894	185,543	152,584,060
1959	29,741,982	102,622,211	47,728,534	554,738	2,211,649	...	182,859,114
1960	36,339,548	83,341,244	28,494,941	1,227,771	85,216	236,129	149,724,849

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try. Considerable credit must also be given to the solidarity among tunaboat owners and their awareness of the world tuna market and of their position in it.

The new scale of prices restored the traditional spread of $40 between the price per ton of Skipjack and Yellowfin. The spread had been increased to $50 per ton in midyear when prices were increased unequally for the two tuna species.

1952 Catch Limit Likely

● As the California tuna fleet gradually changed by conversion from a preponderantly clipper fleet fishing with hook and line to a seiner fleet fishing with huge nets, the catch of tuna in the eastern Pacific changed its character. Yellowfin, which comes in larger sizes and commands a higher ex-vessel price, made up a bigger and bigger proportion of the total catch, at the expense of Skipjack, which is highly abundant in the eastern Pacific.

The international organization responsible for investigation and conservation of the tuna stocks in the eastern tropical Pacific is the Inter-American Tropical Tuna Commission. Present member governments are the U. S., Costa Rica, Ecuador and Panama, Ecuador having adhered just last year. The commission, keeping a sharp statistical eye on the tuna catch, met in September 1961 at Long Beach, Calif., listened to testimony by its technical staff, and decided that a limit must be placed on the 1962 catch of Yellowfin in order to maintain the stocks of that species at the "maximum sustainable yield level." The Commission listened to the views of canners, vessel owners, fishermen and scientists, and concluded that the best method of protecting the Yellowfin stocks was to set a total catch limit of 83,000 tons for 1962. All four Commission member governments concurred in this decision, and the U. S., for its part, has introduced before Congress legislation to permit the commission to put limits on American tuna fishermen.

● According to the plans, the open season for Yellowfin in the Eastern Pacific began January 1, 1962. The season will remain open until 74,600 tons of Yellowfin are caught, after which vessels will be permitted to land only such Yellowfin as they pick up in catches of Skipjack, and that only up to 15% of each load. By the time the entire 83,000 tons are landed, the Commission estimates the year will have ended with the Yellowfin stocks at a "safe" level.

At the end of 1961, the California landings alone, including transshipments from U. S.-flag vessels, stood at 100,189 tons of Yellowfin, a figure that makes the Commission's estimate of 120,000 tons total catch by all fishermen look pretty accurate.

● Although the California landings of Yellowfin, as reported by the U. S. Bureau of Commercial Fisheries, were the highest on record, the total California landings, all species, were not. In 1950 a figure of 183,315 tons was recorded as total California domestic-caught tuna receipts, including transshipments from U. S.-flag vessels. The 1961 grand total was only 164,915 tons, 18,400 tons less; but the Yellowfin landings for 1960 were only 89,969 tons as compared with the 100,189 record tonnage in 1961.

A little figuring discloses that in 1961 Yellowfin accounted for 61% of the total receipts, while in the previous record year, 1950, when there were fewer seiners and more clippers in the business, the proportion of Yellowfin to the total was only 49%.

Import Impact Concerns Tunamen

● The tuna industry went to Washington again in December, 1961, when spokesmen for canners, vessel owners, fishermen's unions and others appeared before a congressional subcommittee studying the impact of imports on employment in the U. S.

The spokesmen voiced varying views. For the vessel owners it was pointed out that imports of frozen tuna had become a larger and larger proportion of the raw material used by canners in the U. S., and that the U. S. tuna fleet—men as well as vessels—had shrunk accordingly. Once again the legislators were told that unless some protection is provided against excessive imports, the fleet will wither and die.

On the other hand, some canners who use preponderantly or exclusively imported tuna declared that imported fish is necessary to meet the demand of the American market, particularly in the case of Albacore, where domestic production has never reached the requirements of the present market. In their pleas for protection from imports, the tunaboat spokesmen were joined and reinforced by U. S. shrimp fishermen's representatives.

Albacore Landings Down

● The 1961 Albacore season followed the usual unpredictable, erratic course. The season began early and auspiciously, with early catches ahead of 1960, and the going price around $350 per ton, which was $25 higher than the closing price the year previous.

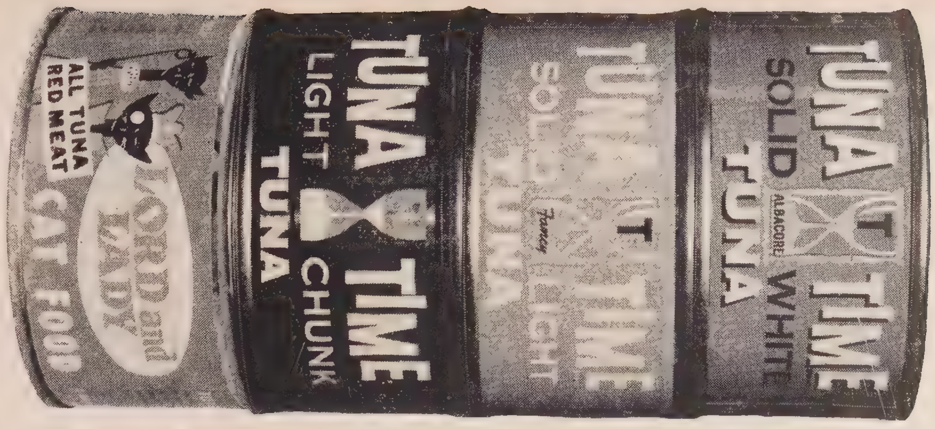
The fish, which usually move north as the season progresses, began their migration early last year, according to Albacore boat skippers, and also seemed to move out to sea, too far for many of the Albacore boats to follow them.

In mid-August most canners increased their price to $375 per ton for Albacore, but the fish still refused to be caught, even at that price. The season closed with total California landings of Albacore at 12,685 tons, down 3,000 tons from 1960's total of 15,566.

U.S. Insular Tuna Deliveries to Hawaii, Puerto Rico and Samoa

(In tons as computed by the U. C. Bureau of Commercial Fisheries)

	1961	1960
Albacore:		
Domestic-caught	---	---
Imports and foreign-caught	23,799	18,676
TOTAL	23,799	18,676
Skipjack:		
Domestic-caught	9,211	6,065
Imports and foreign-caught	9,886	4,234
TOTAL	19,097	10,299
Yellowfin and Bigeye:		
Domestic-caught	10,329	7,609
Imports and foreign-caught	12,372	14,171
TOTAL	22,701	21,780
TOTAL TUNA		
Domestic-caught	19,540	13,672
Imports and foreign-caught	46,057	37,081
TOTAL	65,597	50,752



100%
American
Products

AMERICAN
TUNA CANNING CO.
Terminal Island, Calif.

CALIFORNIA PACK OF CANNED TUNA AND RELATED FISHES

YEAR	SAN PEDRO DISTRICT								(Cases) SAN DIEGO DISTRICT								San Francisco & Monterey	GRAND TOTAL	YEAR
	Yellowfin	Bluefin	Skipjack	Albacore	Flakes	Tonno	Tunalike (Bonito & Yellowtail)	TOTAL	Yell●wfin	Bluefin	Skipjack	Albacore	Flakes	Tonno	Tunalike (Bonito & Yellowtail)	TOTAL			
1926	122,968	67,525	189,581	43,660	11,786	90,689	47,710	573,919	96,363	2,758	85,389	14,555	4,162	40,864	15,416	259,507	....	833,426	1926
1927	185,423	40,363	155,755	105,598	7,816	197,275	26,660	718,890	200,635	9,645	226,420	20,481	435	10,221	20,147	487,984	....	1,206,874	1927
1928	323,813	85,994	64,061	99,093	7,577	106,038	14,759	701,335	287,770	46,348	130,430	658	9,156	11,783	9,798	495,943	....	1,197,278	1928
1929	199,292	67,091	128,436	130,212	7,707	88,454	49,943	671,135	458,687	22,637	218,696	2,426	10,906	31,351	13,027	757,730	....	1,428,865	1929
1930	262,278	302,660	82,282	143,748	11,508	57,110	73,049	932,635	739,616	6,944	185,848	1,783	18,053	17,875	17,635	987,754	....	1,920,389	1930
1931	182,115	46,462	166,091	144,796	12,850	35,514	37,289	625,117	431,229	...	112,307	177	6,591	706	3,006	554,016	....	1,179,133	1931
1932	275,263	8,510	101,626	52,215	11,517	42,247	34,348	525,726	403,050	177	203,381	....	4,774	....	10,881	622,263	13,162	1,161,151	1932
1933	258,982	7,580	74,728	49,391	10,907	41,200	19,281	462,069	678,810	1	198,313	....	2,183	....	50,797	930,104	....	1,392,173	1933
1934	317,846	325,350	71,350	82,182	22,402	55,163	38,961	913,254	780,066	6,683	195,798	....	8,100	....	23,409	1,014,056	....	1,927,310	1934
1935	306,202	413,630	88,746	107,501	33,909	81,660	108,203	1,139,851	948,276	24,871	249,747	4,048	7,749	545	101,039	1,336,875	....	2,476,726	1935
1936	343,234	311,987	184,930	53,849	9,906	57,797	85,404	1,047,107	1,074,811	22,390	295,330	35	14,967	740	131,802	1,540,075	....	2,587,182	1936
1937	416,611	188,432	276,165	83,123	34,534	136,612	88,870	1,224,347	1,165,866	27,103	487,751	8,036	15,904	1,125	88,182	1,793,967	....	3,018,314	1937
1938	273,365	273,358	151,081	265,034	47,092	67,404	119,270	1,196,604	1,010,814	49,840	221,917	24,355	17,384	....	77,818	1,402,128	....	2,598,732	1938
1939	578,727	191,456	212,042	281,666	41,104	70,022	151,241	1,526,258	1,348,565	27,020	257,258	46,372	31,136	7,318	32,463	1,750,402	28,637	3,305,297	1939
1940	536,391	267,343	306,447	122,484	85,459	124,094	106,225	1,548,443	1,469,428	45,867	529,776	19,304	141,861	60,138	49,624	2,315,998	3,953	3,868,394	1940
1941	308,886	136,333	109,563	73,024	40,545	33,530	161,835	863,716	1,016,759	32,369	323,466	10,145	130,004	308	144,331	1,657,382	9,071	2,530,169	1941
1942	214,391	250,685	128,980	128,670	39,880	23,479	34,542	820,627	545,517	28,413	590,594	104,578	111,096	....	35,138	1,415,336	6,257	2,242,220	1942
1943	303 881	162,844	88,203	187,052	120,548	17,239	96,595	976,362	392,114	12,021	294,964	227,347	381,967	....	12,298	1,320,711	11,342	2,308,415	1943
1944	341,687	357,531	105,863	125,632	234,639	15,365	20,817	1,201,534	485,796	16,473	257,994	307,806	530,368	....	7,521	1,605,958	1,685	2,809,177	1944
1945	460,982	275,116	89,279	148,286	452,292	16,198	34,628	1,476,781	1,037,009	22,742	458,895	329,251	96,162	....	32,524	1,976,583	3,078	3,456,442	1945
1946	663,814	304,248	202,729	141,629	558,026	....	88,589	1,959,035	1,549,557	28,753	445,560	233,622	268,767	....	63,762	2,590,021	6,341	4,555,397	1946
1947	765,426	342,309	209,281	104,726	417,644	7,403	308,540	2,155,329	1,875,087	6,557	695,170	145,300	323,511	26,359	68,927	3,140,911	61,258	5,357,498	1947
1948	969,732	94,190	200,693	290,811	477,769	22,663	270,404	2,326,608	2,364,819	1,991	729,505	426,255	366,828	....	39,420	3,964,818	55,526	6,346,952	1948
1949	614,847	38,142	157,373	289,063	1,330,358	78,821	49,195	2,557,799	2,059,468	2,889	904,793	535,013	420,491	4,038	24,884	3,951,576	81,021	6,590,396	1949
1950	742,815	14,786	266,809	586,683	2,456,705	202,368	14,595	4,284,761	913,458	3,300	495,462	482,894	1,898,568	54,988	7,741	3,856,411	143,273	8,141,172	1950
1951	611,673	....	....	337,456	2,670,876	104,235	77,229	3,801,469	974,469	....	....	269,774	2,122,698	58,042	10,260	3,435,243	293,873	7,530,585	1951
1952	3,089,057	.	...	814,198	1,216,024	86,948	196,453	5,402,680	1,354,515	...	....	509,385	459,840	45,328	34,234	2,403,302	296,860	8,102,842	1952
1953	3,009,258	*	*	1,097,602	1,179,273	122,091	100,252	5,508,476	1,723,934	*	*	500,615	516,922	53,911	69,866	2,865,248	250,385	8,624,109	1953
1954	725,729	...	...	699,810	4,377,438	166,011	27,126	5,946,114	812,525	...	....	249,972	2,147,546	64,155	48,409	3,322,607	369,962	9,638,683	1954
1955	672,464	....	....	903,814	4,039,030	160,694	2,501	5,778,503	498,611	....	....	244,599	1,476,445	42,186	2,218	2,264,059	507,116	8,549,678	1955
1956	565,289	....	....	613,312	4,717,583	122,074	3,978	6,022,236	586,218	....	....	234,984	2,179,516	60,745	2,516	3,063,979	576,364	9,662,579	1956
1957	501,952	....	..	830,372	4,942,747	102,544	3,924	6,381,539	519,059	....	....	255,225	1,972,937	64,173	4,364	2,815,758	528,147	9,725,444	1957
1958	581,821	*	*	671,668	5,724,674	118,296	101,461	7,197,920	443,563	*	*	126,264	1,965,899	56,017	7,938	2,599,681	621,066	10,418,667	1958
1959	611,434	*	*	1,394,434	5,312,851	165,985	57,355	7,542,059	291,481	*	*	112,047	1,440,557	16,176	103	1,860,364	730,020	10,132,443	1959
1960	5,739,603	*	*	1,508,650	758,259	156,052	10,739	8,173,303	1,017,563	*	*	191,183	220,411	*	---	1,429,157	829,757	10,432,217	1960
1961	6,800,486	*	*	1,225,787	*	*	161,073	8,217,346	1,709,055	*	*	170,488	*	*	*	1,879,543	698,868	10,795,757	1961

*Segregation of lightmeat tuna pack as to species, and amounts of chunks, flakes and tonno not available at presstime. Accordingly, all lightmeat tuna and special packs made from lightmeat have been shown under Yellowfin. Albacore totals also include chunks, flakes and tonno packed from this species.

1961-Imports of Canned Bonito to U.S.

(Pounds)

COUNTRIES	Oct. '60	Nov. '60	Dec. '60	Jan.	Feb.	March	April	May	June	July	August	Sept.	TOTAL
Peru	412,000	383,000	745,000	741,000	1,062,000	1,257,000	709,000	909,000	972,000	596,000	1,037,000	358,000	9,181,000
Other Countries	104,000	15,000	42,000	10,000	18,000	76,000	31,000	42,000	29,000	27,000	74,000	56,000	524,000
TOTAL	516,000	398,000	787,000	751,000	1,080,000	1,333,000	740,000	951,000	1,001,000	623,000	1,111,000	414,000	9,705,000

SAN PEDRO CANNED TUNA BY GRADES

YEAR & TYPE	Solid	Standard	Chunks	Grated & Flakes	Dark & Light	Tonno	Misc.	TOTAL
1951								
Lightmeat	497,942	113,731	666,590	1,701,833	48,690	103,817	11,260	3,143,863
Whitemeat	264,789	72,667	99,723	141,941	610	418	229	580,377
Yellowtail & Bonito	---	22,926	---	66,153	----	---	---	89,079
TOTAL	762,731	209,324	766,313	1,909,927	49,300	104,235	11,489	3,813,319
1952								
Lightmeat	820,745	89,832	2,198,446	973,275	54,830	83,083	94,883	4,315,094
Whitemeat	505,833	12,114	302,238	178,827	6,276	1,738	24,375	1,031,401
Yellowtail & Bonito	---	53,475	7,606	132,457	----	---	---	193,538
TOTAL	1,326,578	155,421	2,508,290	1,284,559	61,106	84,821	119,258	5,540,033
1953								
Lightmeat	580,967	128,009	2,187,041	745,753	29,961	124,626	136,270	3,932,627
Whitemeat	699,469	18,379	326,908	217,422	10,546	164	40,211	1,313,099
Yellowtail & Bonito	---	10,915	16,865	75,941	----	---	---	103,721
TOTAL	1,280,436	157,303	2,530,814	1,039,116	40,507	124,790	176,481	5,349,447
1954								
Lightmeat	595,102	130,717	2,982,897	665,484	38,560	115,684	183,970	4,712,414
Whitemeat	691,162	8,648	272,537	203,845	7,687	327	22,458	1,206,664
Yellowtail & Bonito	---	8,456	812	17,858	----	---	---	27,126
TOTAL	1,286,264	147,821	3,256,246	887,187	46,247	116,011	206,428	5,946,204
1955								
Lightmeat	635,460	37,004	2,960,532	476,245	27,175	133,519	94,190	4,364,125
Whitemeat	872,403	31,411	233,586	232,775	5,084	---	36,618	1,411,877
Yellowtail & Bonito	---	272	---	2,229	----	---	---	2,501
TOTAL	1,507,863	68,687	3,194,118	711,249	32,259	133,519	130,808	5,778,503
1956								
Lightmeat	546,110	34,284	3,795,946	399,586	47,289	119,332	69,433	5,011,980
Whitemeat	607,003	26,656	287,068	117,444	4,257	25	15,340	1,057,793
Yellowtail & Bonito	---	---	---	3,978	----	---	---	3,978
TOTAL	1,153,113	60,940	4,083,014	521,008	51,546	119,357	84,773	6,073,751
1957								
Lightmeat	479,153	22,799	3,582,157	466,331	61,883	100,666	76,444	4,789,433
Whitemeat	793,641	36,731	536,927	186,358	9,959	1,878	22,688	1,588,182
Yellowtail & Bonito	---	39	---	3,885	----	---	---	3,924
TOTAL	1,272,794	59,569	4,119,084	656,574	71,842	102,544	99,132	6,381,539
1958								
Lightmeat	580,370	1,451	4,545,758	681,551	66,919	118,296	45,540	6,039,885
Whitemeat	670,560	1,108	239,721	131,429	2,434	---	11,322	1,056,574
Yellowtail & Bonito	---	2,000	56,802	41,823	----	---	836	101,461
TOTAL	1,250,930	4,559	4,842,281	854,803	69,353	118,296	57,698	7,197,920
1959								
Lightmeat	602,781	8,653	5,743,150	623,934	81,916	165,985	42,221	7,268,640
Whitemeat	921,065	---	265,508	176,370	6,199	---	25,292	1,394,434
Yellowtail & Bonito	---	---	26,144	30,824	---	---	449	57,417
TOTAL	1,523,846	8,653	6,034,802	831,128	88,115	165,985	67,962	8,720,491
1960								
Lightmeat	476,888	---	5,262,711	528,322	58,379	156,052	34,670	6,517,022
Whitemeat	1,165,149	---	343,501	165,305	6,253	---	28,653	1,708,861
Yellowtail & Bonito	---	---	5,595	5,144	---	---	---	10,739
TOTAL	1,642,037	---	5,611,807	698,771	64,632	156,052	63,323	8,236,622

CALIFORNIA TUNA PACK BY MONTHS-1961

(Cases)

	Jan.	Feb.	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.	Total Cases "As they run"	Total Cases Basis 48-1/2s
ALBACORE														
Solid Pack	130,188	81,551	64,241	58,577	30,564	9,408	160,127	192,411	183,888	169,807	79,235	72,656	1,232,653	
Standard Pack	---	---	---	---	---	---	106	70	122	268	687	470	1,723	
Chunk Pack	32,458	20,743	29,653	17,954	11,653	7,305	39,598	29,318	24,557	9,076	11,901	16,757	250,973	
Grated & Flakes	16,830	11,651	10,727	8,432	3,639	2,050	32,540	39,395	34,467	29,350	10,363	9,604	209,048	
Dark & Light	6,270	3,038	2,639	2,638	804	---	547	---	1,288	1,112	965	201	19,502	
Unspecified	644	---	501	896	1,885	497	877	2,470	3,418	831	179	498	12,696	
Total Whitemeat	186,390	116,983	107,761	88,497	48,545	19,260	233,795	263,664	247,740	210,444	103,330	100,186	1,726,595	1,639,398
LIGHTMEAT														
Solid Pack	66,609	64,877	95,002	41,773	82,481	66,475	43,827	76,297	38,939	53,982	58,945	67,077	756,284	
Standard Pack	306	---	---	---	---	228	174	78	516	---	---	---	1,302	
Chunk Pack	553,831	470,425	926,082	588,457	---	545,613	610,487	703,134	635,143	455,492	593,770	550,505	6,632,939	
Grated & Flakes	50,274	46,963	74,734	42,491	62,103	55,705	55,523	78,790	59,612	57,327	61,813	55,294	700,629	
Dark & Light	6,020	5,354	6,483	5,347	6,152	5,638	6,101	6,727	5,743	5,479	5,806	5,436	70,286	
Tonno	17,116	16,409	23,081	5,679	5,090	7,497	16,554	9,952	12,685	17,438	13,436	14,049	158,986	
Unspecified	3,237	7,851	6,409	---	1,399	2,070	1,004	3,200	4,702	---	---	7,356	37,228	
Total Lightmeat	697,393	611,879	1,131,791	683,747	157,225	683,226	733,670	878,178	757,340	589,718	733,770	699,717	8,357,654	8,995,286
Total True Tuna	883,783	728,862	1,239,552	772,244	205,770	702,486	967,465	1,141,842	1,005,080	800,162	837,100	799,903	10,084,249	10,634,684
Bonito & Yellowtail														
Chunk Pack	5,879	8,378	---	2,648	---	1,745	2,272	9,709	5,543	17,803	13,473	39,367	106,817	
Grated & Flakes	5,917	6,528	---	---	---	---	4,357	6,975	455	3,217	747	27,060	55,256	
Total Tuna-Like	11,796	14,906	---	2,648	---	1,745	6,629	16,684	5,998	21,020	14,220	66,427	162,073	161,073
GRAND TOTAL	895,579	743,768	1,239,552	774,892	205,770	704,231	974,094	1,158,526	1,011,178	821,182	851,320	866,330	10,246,322	10,795,757

Deliveries of Tuna in California

(Pounds)

Year	Albacore	Bluefin	Bonito	Skipjack	Yellowfin	Shipments*		TOTAL
						Light Meat	White Meat	
1926	2,469,921	6,526,533	3,121,604	20,951,348	12,564,986			45,634,392
1927	4,579,367	4,898,386	1,718,008	33,805,960	25,934,045			70,935,766
1928	283,321	13,700,870	2,105,903	15,948,104	32,253,206			64,291,404
1929	269,101	7,796,857	2,918,544	27,007,013	37,444,924			75,166,439
1930	283,117	21,921,282	5,164,260	20,485,587	56,654,181			104,508,427
1931	37,322	3,534,030	3,079,673	16,506,761	36,579,480			59,737,266
1932	619,694	1,071,206	2,862,286	21,636,577	36,923,410			63,113,173
1933	487	560,492	2,252,199	16,687,308	51,075,630			70,576.116
1934	171,105	18,357,828	3,232,694	14,830,194	60,913,160			97,474,981
1935	2,447,528	25,173,083	7,896,484	17,197,186	72,294,133			125,008,414
1936	956,771	18,924,883	7,215,916	27,006,105	78,352,644			132,456,319
1937	3,196,770	12,693,922	7,808,070	47,104,092	91,522,458			162,325,312
1938	12,522,594	17,728,031	7,839,993	22,653,631	78,288,144			139,032,393
1939	12,346,858	11,835,715	9,918,875	30,120,891	110,417,801			174,640,140
1940	5,588,670	19,970,268	5,290,928	56,650,155	113,898,209			201,398,266
1941	3,276,257	9,519,012	10,257,602	25,585,468	76,701,760			125,340,099
1942	10,621,193	12,844,564	1,650,689	38,715,182	41,167,441			104,999,069
1943	21,384,864	10,178,170	2,281,884	28,893,784	49,261,328			117,004,030
1944	17,865,866	20,332,011	818,871	29,964,377	62,236,029	972,721**	2,535,547**	134,761,422
1945	21,767,581	20,594,059	2,714,181	33,273,407	86,130,656	1,392,078	60,901	165,932,863
1946	18,064,047	22,031,748	5,625,648	40,877,307	126,425,688	1,028,674	...	214.056,112
1947	13,145,780	20,837,634	13,697,171	52,315,449	149,066,794	1,539,245	269,397	250,871,470
1948	36,425,846	6,528,807	9,135,126	58,752,316	191,635,651	168,544	1,141,747	303,788,037
1949	44,017,014	4,389,471	1,829,541	78,564,030	184,972,285	691,199	254,664	314,718,204
1950	61,746,421	2,738,963	695,614	124,724,565	182,224,422	11,360,744	4,378,420	387,869,149
1951	30,677,931	3,862,418	776,803	115,778,923	160,547,928	16,018,444	17,520,891	345,183,338
1952	49,789,314	4,576,685	2,142,157	84,734,226	178,376,101	11,301,336	22,525,248	353,445,067
1953	33,834,626	9,172,855	3,102.647	122,306,183	132,086,346	16,888,789	46,186,816	363,578,262
1954	26,107,290	21,024,820	2,319,060	153,756,190	119,401,795	47,434,639	38,466,383	408,510,177
1955	29,001.811	13.609,177	136,990	101,837,635	122,291,864	60,072,312	44,844,675	371,794,464
1956	37,042,581	12,625,968	127,614	120,153,222	149,280,994	71,600,590	20,322,775	411,153,744
1957	43,466,941	20,312,596	219,031	90,498,163	136,955,837	67,174,436	39,564,027	398,191,031
1958	27,059,398	31,048,845	5,546,806	122,855,653	124,095,185	125,098,739	27,485,321	463,225,947
1959	32,729,279	15,194,290	3,007,285	98,481,407	108,369,847	153,117,132	29,741,982	440,641,222
1960	447,337	963,479	---	8,609,613	60,184,768	113,385,301	36,339,548	219,930,046

*These are largely importations into California, but included are some fish caught by California fleet and landed outside of the United States.

**Shipments not available prior to 1944.

Pacific Northwest Tuna Packs

(Oregon and Washington - in Standard Cases)

Year	Albacore				Lightmeat				Total	Year
	Solid	Chunks	Flakes	Total	Solid	Chunks	Flakes	Total		
1955	438,945	39,583	105,412	583,940	7,308	209,367	24,760	241,435	680,380	1955
1956	642,218	54,751	123,785	820,754	22,550	378,238	38,862	439,650	1,260,404	1956
1957	561,291	67,510	140,042	768,843	10,484	318,473	11,321	340.278	1,109,121	1957
1958	635,013	69,384	145,459	849,856	9,283	358,104	9,828	377,215	1,227,071	1958
1959	699,385	49,006	141,781	890,172	6,616	371,270	11,403	389,289	1,279,461	1959
1960	780,336	80,397	139,950	1,000,683	11,373	435,173	26,311	472,857	1,473,540	1960

California Landings of Domestic-Caught Tuna by Species and Gear

(In tons as compiled by the U. S. Bureau of Commercial Fisheries)

YEAR	NO. OF TRIPS**	ALBACORE	BLUEFIN	SKIPJACK	YELLOWFIN	BONITO	YELLOWTAIL	TOTAL
BAIT BOAT-CLIPPER FLEET-ALBACORE FLEET								
1961	146	12,685	---	9,341	13,057	---	---	35,083
1960	243	15,566	---	17,411	22,582	---	---	55,559
1959	441	14,684	16	43,251	27,401	3	8	85,363
TUNA PURSE SEINERS (CONVERTED & REGULAR)								
1961	529	925	9,909	22,801	83,153	3,691	81	***120,560
1960	465	104	5,439	5,937	71,404	203	---	**** 83,087
1959	237	---	7,217	5,811	27,071	993	---	41,092
TRANSSHIPMENTS FROM U. S. FLAG VESSELS, 1961								
Bait Boat	(29)	---	---	3,897	1,218	---	---	5,115
Purse Seine	(15)	---	---	1,396	2,761	---	---	4,157
TOTAL DOMESTIC-CAUGHT TUNA RECEIPTS								
1961	675	13,610	9,909	37,435	100,189	3,691	81	164,915
1960	708	15,670	5,439	27,598	96,999	302	---	145,909
1959	678	14,684	7,233	60,284	56,602	996	8	139,807
1958	735	12,633	15,160	63,712	64,106	2,151	10	157,772
1957	710	20,908	9,725	46,388	68,250	77	135	145,483
1956	862	18,319	6,067	60,355	75,145	38	101	160,025
1955	674	11,009	6,446	51,175	61,300	57	31	130,018
1954	*	13,332	10,293	77,801	61,075	1,142	717	164,360
1953	*	17,852	4,780	63,201	64,934	1,505	2,513	154,785
1952	*	24,900	2,083	42,368	89,218	1,061	4,531	164,161
1951	*	15,458	1,751	57,947	80,123	373	2,072	157,724
1950	*	27,102	1,315	63,013	89,969	316	1,600	183,315

*Data not available.

**From high seas fisheries off Latin America (exclusive of number of local albacore, bluefin, and bonito deliveries; truck receipts; and transhipments).

***Consists of 96,098 tons caught by converted purse seiners in 392 trips, and 24,462 tons by regular seiners in 137 trips.

****Consists of 53,294 tons caught by converted purse seiners in 221 trips, and 29,689 tons by regular seiners in 244 trips.

FRANCO-ITALIAN PACKING CO.

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California Imports of Frozen Tuna

(In tons as compiled by the U. S. Bureau of Commercial Fisheries)

Customs District	Year	Albacore	Bluefin	Skipjack	Yellowfin	TOTAL
California:				TONS		
San Francisco	1961	2,728	304	87	9,454	12,573
	1960	1,891	417	260	9,457	12,025
	1959	1,392	---	323	9,385	11,100
San Pedro	1961	12,422	297	3,620	18,862	*35,201
	1960	14,921	126	8,641	25,919	**48,977
	1959	11,461	223	12,142	36,328	60,154
San Diego	1961	762	38	1,489	2,971	5,260
	1960	2,627	17	812	1,523	4,979
	1959	1,063	---	315	4,206	5,584
California Total	1961	15,912	639	5,196	31,287	53,034
	1960	18,809	560	9,713	36,899	65,981
	1959	13,916	223	12,780	49,919	76,838
	1958	13,740	350	10,151	48,803	73,044
	1957	19,582	208	10,751	23,223	§54,123
	1956	8,021	81	7,740	26,771	§42,693
	1955	24,154	179	9,082	20,295	§54,450
	1954	19,069	250	6,951	14,011	§42,763
	1953	20,892	30	1,600	4,814	§28,356
	1952	9,620	---	2,317	3,665	15,602
	1951	7,394	---	1,347	6,771	15,512
	1950	1,960	---	1,008	5,188	8,156

*Includes 1,326 tons of albacore and 2,140 tons of yellowfin from Japanese Atlantic Ocean fishing.

**Includes 3,580 tons of albacore and 4,353 tons of yellowfin from Japanese Atlantic Ocean fishing.

§Includes some unclassified tuna.

California Pack of Canned Tuna and Related Fishes

YEAR	— Cases —									YEAR
	SAN PEDRO DISTRICT				SAN DIEGO DISTRICT				GRAND TOTAL	
	Light Tuna	White Tuna	Other Tuna*	TOTAL	Light Tuna	White Tuna	Other Tuna*	TOTAL		
1912		.		. .	.	. .	...	...	75,900**	1912
1913				...	.	...	...	...	77,500**	1913
1914	.		. .	...	. .	. .	. .	. .	217,000**	1914
1915	.			.	.	...	...	...	237,365**	1915
1916	315,880	82,593	6,457	404,930	71,062	13,593	245	84,900	489,830	1916
1917	382,273	118,769	11,928	512,970	140,563	17,261	12,746	170,570	683,540	1917
1918	228,241	82,801	87,110	398,152	50,129	...	73,072	123,201	521,353	1918
1919	487,812	144,383	65,008	697,203	62,318	47,869	24,572	134,759	831,962	1919
1920	668,012	§	1,534	669,546	167,633	§	1,623	169,256	838,802	1920
1921	72,410	255,194	...	327,604	27,869	82,157	48	110,074	437,678	1921
1922	334,733	166,496	3,651	504,880	129,349	27,269	23	156,641	661,521	1922
1923	312,187	209,591	17,803	539,581	224,315	88,014	4,869	317,198	856,779	1923
1924	134,497	278,855	113,401	526,753	27,207	106,958	11,382	145,547	672,300	1924
1925	323,422	358,940	116,149	798,511	187,909	95,007	11,936	294,852	1,093,363	1925
1926	380,074	43,660	150,185	573,919	188,649	14,578	56,280	259,507	833,426	1926
1927	381,541	105,598	231,751	718,890	436,700	20,916	30,368	487,984	1,206,874	1927
1928	473,868	99,093	128,374	701,335	473,704	658	21,581	495,943	1,197,278	1928
1929	394,819	130,212	146,104	671,135	700,020	2,426	55,284	757,730	1,428,865	1929
1930	658,728	143,748	130,159	932,635	950,461	1,783	35,510	987,754	1,920,389	1930
1931	394,668	144,796	85,653	625,117	543,536	177	10,303	554,016	1,179,133	1931
1932	385,399	52,215	88,112	525,726	606,608		15,655	622,263	1,161,151	1932
1933	341,290	49,391	71,388	462,069	877,124	.	52,980	930,104	1,392,173	1933
1934	714,546	82,182	116,526	913,254	982,547	...	31,509	1,014,056	1,927,310	1934
1935	808,578	107,501	230,772	1,139,851	1,222,894	4,648	109,323	1,336,875	2,476,727	1935
1936	840,151	53,849	153,107	1,047,107	1,392,531	35	147,509	1,540,075	2,587,182	1936
1937	881,208	83,123	260,016	1,224,346	1,680,720	8,036	105,211	1,793,967	3,018,314	1937
1938	697,804	265,034	233,766	1,196,604	1,282,571	24,355	95,202	1,402,128	2,598,732	1938
1939	982,225	281,666	262,367	1,526,258	1,633,113	46,372	70,917	1,750,402	3,305,297	1939
1940	1,110,181	122,484	315,778	1,548,443	2,045,071	19,304	251,623	2,315,998	3,868,394	1940
1941	554,782	73,024	235,910	863,716	1,372,594	10,145	274,643	1,657,382	2,530,169	1941
1942	594,056	128,670	97,901	820,627	1,164,524	104,578	146,234	1,415,336	2,242,220	1942
1943	554,928	187,052	234,382	976,362	699,099	227,347	394,265	1,320,711	2,308,415	1943
1944	805,081	125,632	270,821	1,201,534	760,263	307,806	537,889	1,605,958	2,809,177	1944
1945	825,377	148,286	503,118	1,476,781	1,518,646	329,251	128,686	1,976,583	3,456,442	1945
1946	1,170,791	141,629	646,615	1,959,035	2,023,870	233,622	332,529	2,590,021	4,555,397	1946
1947	1,317,016	104,726	733,587	2,155,329	2,576,804	145,300	418,797	3,140,911	5,357,498	1947
1948	1,264,615	290,811	771,182	2,326,608	3,096,315	462,255	406,248	3,964,818	6,346,952	1948
1949	810,362	289,063	1,458,374	2,557,799	2,967,150	535,013	449,413	3,951,576	6,590,396	1949
1950	1,024,410	586,683	2,673,668	4,284,761	1,412,220	482,894	1,961,297	3,856,411	8,141,172	1950
1951	3,143,863	580,377	77,229	3,801,469	3,015,164	409,819	10,260	3,435,243	7,530,264	1951
1952	4,204,207	1,002,020	196,453	5,402,680	1,742,124	626,944	34,234	2,403,302	8,102,842¶	1952
1953	4,042,121	1,366,103	100,252	5,508,476	2,139,393	655,989	69,866	2,865,248	8,624,109¶	1953
1954	4,712,414	1,206,664	27,126	5,946,204	2,880,712	393,486	48,409	3,302,847	9,638,773¶	1954
1955	4,872,188	903,814	2,501	5,778,503	2,017,242	244,599	2,218	2,264,059	8,549,678¶	1955
1956	4,980,228	1,038,030	3,978	6,022,236	2,717,577	343,886	2,516	3,063,979	9,662,579¶	1956
1957	4,789,433	1,588,182	3,924	6,381,539	2,352,808	458,586	4,364	2,815,758	9,197,297	1957
1958	6,039,885	1,056,574	101,461	7,197,920	2,407,728	184,015	7,938	2,599,681	10,418,667	1958
1959	6,090,270	1,394,434	57,355	7,542,059	1,748,214	112,047	103	1,860,364	10,132,443	1959
1960	6,517,149	1,708,861	10,739	8,236,749	1,203,030	226,627	...	1,429,657	10,497,232	1960
1961	6,800,486	1,255,787	*161,073	8,217,346	1,709,055	170,488	...	1,879,543	10,795,757¶	1961

¶Quantities of tuna canned in Monterey, San Francisco and elsewhere in Northern California have been included in the grand total. Figures for final year are temporary totals from official sources. Data for previous years have been corrected according to official statistics of the California Department of Fish and Game.

*"Other Tuna" through 1950 includes Bonito, Yellowtail, Flakes and Tonno. For 1951 and thereafter this column includes only Yellowtail and Bonito, Flakes and Tonno being included in other columns.

§Included under other heads.

**No segregation available prior to 1916.

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Del Monte® Foods

Tuna Prices Per Ton Paid Fishermen

YEAR	Albacore	Yellowfin	Bluefin	Skipjack
1917	$30	$50	$45	$40
1918	125	90	80	40
1919	200	90	80	40
1920	300	90	80	40
1921	145	80	80	60
1922	250	100	80	60
1923	300	80	75	60
1924	360	80	80	60
1925	200	80	80	60
1926	175	110	110	75-80
1927	Nominal	110	90	75
1928	200 up	120	90	75
1929	300	120	110	70-80
1930	200	120	110	90
1931	200	120-100	90	90-80
1932	200	80	75	70
1933	200	100	90	80
1934	200	100	90	80
1935	125-160	100	90	80
1936	Nominal	105-110	95-90	85-90
1937	215	120	110	100
1938	215-130	120	110	100
1939	125	110	100	90
1940	140	110	110	100
1941	140	110-130	110-120	100-110
1942	300-400	190	180	170
1943	325	200	190	180
1944	325-390	200	190	180
1945	390	200	190	180
1946	390-440	200-280	190-270	180-260
1947	410-600	310-340	300	290-320
1948	550-740-425	340	330	320
1949	400-350	340-310	330-300	320-290
1950	400	310	300	290
1951	400-250-300	310	300	290
1952	350-400	320	310	280
1953	400	320	310	280
1954	400-410	350-330	340-320	320-290
1951	350-310-330	330-270	320-210	290-230
1956	375-300	270	280-260	230
1957	310-280-300	270-230-270*	260-200-260	230-190-230*
1958	425	275-283-263	260	235-252-223
1959	435-400	270-240-253	260-240	230-200-217
1960	325-375	250	240	210
1961	325-375	240-290	220-280	210-260

NOTE: - Prices quoted are per ton of round fish in good condition landed at cannery dock. All fish rejected by inspectors, either as landed or after precooking, are deducted from the gross weight.

Figures given undertake to state the prevailing market level. Where a range in prices is shown it represents a definite change in market level in the course of the season, the movement being from the first to the second figures stated. Quotations for 1943 through 1945 are OPA ceiling prices for cannery fish, and represent the total amounts which may be paid the fishermen in cash or allowances, save for the cost of war-risk insurance. The lower figures in 1946 are ceiling prices and the higher represent levels attained after removal of OPA controls.

*Final prices quoted for Yellowfin and Skipjack were the minimum prices acceptable for opening bids on the tuna auction initiated at San Diego in 1957 by the American Tunaboat Association.

SAN DIEGO CANNED TUNA

(Cases -- All Sizes)

Year	Yellowfin	Bluefin	Skipjack	Albacore	Tonno	Tuna Flakes	Yellowtail	Bonito	TOTAL
1930	739,616	6,944	185,848	1,783	17,875	18,053	4,838	12,797	987,754
1931	431,229	.....	112,307	177	706	6,591	749	2,257	554,016
1932	403,050	177	203,381	.....	.....	4,774	668	10,213	622,263
1933	678,810	1	198,313	.....	.....	2,183	32,129	18,668	930,104
1934	780,066	6,683	195,798	.....	.....	8,100	6,100	17,309	1,014,056
1935	948,276	24,871	249,747	4,648	545	7,749	64,054	36,985	1,336,875
1936	1,074,811	22,390	295,330	35	740	14,967	95,059	36,743	1,540,075
1937	1,165,866	27,103	487,751	8,036	1,125	15,904	44,128	44,054	1,793,967
1938	1,010,814	49,840	221,917	24,355	.....	17,384	43,794	34,024	1,402,128
1939	1,348,565	27,020	257,528	46,372	7,318	31,136	12,875	19,588	1,750,402
1940	1,469,428	45,867	529,776	19,304	60,138	141,861	27,621	22,003	2,315,998
1941	1,016,759	32,369	323,466	10,145	308	130,004	103,066	41,265	1,657,382
1942	545,517	28,413	590,594	104,578	.....	111,096	20,965	14,173	1,415,336
1943	392,114	12,021	294,964	227,347	.....	381,967	5,488	6,810	1,320,711
1944	485,796	16,473	257,994	307,806	.....	530,368	3,237	4,284	1,605,958
1945	1,037,009	22,742	458,895	329,251	.....	96,162	14,074	18,450	1,976,583
1946	1,549,557	28,753	445,560	233,622	.....	268,767	28,965	34,797	2,590,021
1947	1,875,087	6,557	695,170	145,300	26,359	323,511	45,800	23,127	3,140,911
1948	2,364,819	1,991	729,505	462,255	.....	366,828	31,362	8,058	3,964,818
1949	2,059,468	2,889	904,793	535,013	4,038	420,491	22,695	2,189	3,951,576
1950	913,458	3,300	495,462	482,894	54,988	1,898,568	3,235	4,506	3,856,411
1951	*	2,424,215*	*	370,000	58,042	584,201	**	270**	3,437,428
1952	*	1,405,292*	*	534,574	44,576	485,423	**	3,115**	2,472,980
1953	*	1,674,428*	*	494,137	55,009	515,704***	52,042	17,824	2,809,144
1954	*	812,525*	*	249,972	64,155	2,147,546***	20,983	27,426	3,322,607
1955	*	498,611*	*	244,599	42,186	1,476,445#	1,756	462	2,264,059
1956	*	586,218*	*	234,984	60,745	2,179,516#	1,441	1,075	3,063,979
1957	*	519,059*	*	255,225	64,173	1,872,937#	3,102	1,262	2,815,758
1958	*	443,563*	*	126,264	56,017	1,965,899#	**	7,938**	2,599,681
1959	*	291,481*	*	71,319	16,176	1,481,285#	**	103**	1,860,364
1960	*	282,889*	*	136,976	.....	969,794	**	....	1,389,659

*Yellowfin, Bluefin and Skipjack not given separately. **Yellowtail and Bonito not given separately. ***Includes miscellaneous. #Includes chunks and miscellaneous.

Murray 1-5125

Hillcrest 6-2135

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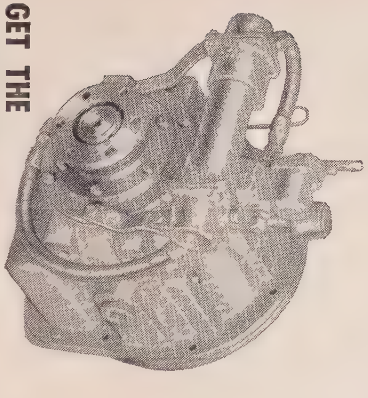

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1961 California Tuna Imports, Style of Preparation

(Data in tons as compiled by U. S. Bureau of Commercial Fisheries)

Style	ALBACORE	BLUEFIN	SKIPJACK	YELLOWFIN	TOTAL
Round	15,762	395	5,196	3,718	25,071
Gilled & Gutted	--	209	---	21,730	21,939
Drsd., heads off	11	---	---	1,008	1,019
Fillets	---	30	---	3,026	3,056
Loins	139	5	---	1,805	1,949
TOTAL	15,912	639	5,196	31,287	53,034

CALIFORNIA CANNED FISH PACKS

YEAR	Albacore Cases	Tuna-Bluefin Cases	Tuna-Skipjack Cases	Tuna-Yellowfin Cases	Tuna-Chunks, Flakes	Tuna-Tonno Cases	Bonito Cases	Yellowtail Cases	Mackerel Cases	Salmon Cases	Sardine Cases	Shad Cases	Squid Cases	Pet Food Cases	Misc. Cases	TOTAL CASES	YEAR
1926	66,001	70,283	274,970	165,561	8,162	131,553	44,186	18,940	550	11,761	2,163,755	.....	23,536	.....	63,794	3,043,052	1926
1927	126,699	50,008	382,175	366,395	7,631	207,496	22,277	24,530	10,961	8,435	2,625,412	6,485	.....	.....	44,396	3,882,900	1927
1928	99,751	132,342	194,491	503,077	16,733	117,821	18,900	5,657	388,471	4,585	2,815,330	7,475	2,056	.....	124,809	4,431,498	1928
1929	132,638	89,728	347,132	612,810	18,613	119,805	47,674	15,296	611,503	5,503	3,941,459	9,791	6,056	.....	53,925	6,012,433	1929
1930	145,531	309,604	268,130	878,382	29,561	74,985	69,341	21,343	127,333	11,202	3,069,524	1,796	25,271	.....	127,236	5,159,239	1930
1931	144,973	46,462	278,398	613,344	19,441	36,220	38,254	2,041	101,217	14,070	1,794,991	.....	19,827	44,372	4,855	3,158,465	1931
1932	65,377	8,687	305,007	678,313	16,291	42,247	42,114	3,115	89,176	2,005	1,001,845	201	.....	67,256	50	2,323,052	1932
1933	49,391	7,581	273,041	937,792	13,090	41,200	36,560	33,518	760,126	3,076	1,422,860	.....	1,740	112,725	1,369	3,698,293	1933
1934	82,182	332,411	267,328	1,097,912	30,502	55,163	52,554	9,816	1,214,491	820	2,051,726	.....	4,257	80,224	1,104	5,324,084	1934
1935	112,149	438,501	338,493	1,254,478	41,658	82,205	128,065	81,177	1,761,186	874	2,529,262	5,039	8,781	122,826	2,269	6,920,625	1935
1936	53,884	334,377	480,260	1,418,045	24,873	58,537	104,078	112,128	1,228,348	.....	2,820,742	13,124	12,282	128,384	5,178	6,803,815	1936
1937	91,159	215,535	763,916	1,582,477	50,438	137,737	129,572	47,480	793,780	147	2,983,204	6,361	5,531	179,230	100	6,986,616	1937
1938	289,389	324,198	372,998	1,284,179	64,476	67,404	125,854	71,234	958,890	.....	2,443,469	11,244	20,167	287,403	545	6,341,557	1938
1939	356,675	218,476	469,570	1,927,292	72,240	77,340	159,090	24,614	968,718	.....	3,326,162	12,665	23,926	384,427	150	8,021,345	1939
1940	145,741	313,210	836,223	2,005,819	227,320	184,232	87,367	68,482	1,435,113	.....	3,188,089	15,743	34,603	832,091	100	9,374,133	1940
1941	92,240	168,702	433,029	1,325,645	170,549	33,838	176,859	129,307	843,747	1,125	5,395,284	68	21,587	1,027,903	16	9,820,485	1941
1942	239,505	279,098	719,574	759,908	150,976	23,479	32,288	37,392	614,090	.....	3,846,785	24,945	941	197,403	.....	6,941,643	1942
1943	425,741	174,865	383,167	696,209	502,515	26,599	35,625	73,268	839,312	1,475	3,400,106	11,516	119,237	.....	11,131	6,699,736	1943
1944	435,123	374,004	363,857	827,483	757,800	15,365	8,490	19,848	986,422	1,691	3,725,657	12,541	141,808	.....	45,206	7,738,949	1944
1945	480,615	297,858	548,174	1,497,991	548,454	16,198	49,816	17,336	589,617	5,457	3,884,582	.....	184,141	.....	225,971	8,346,210	1945
1946	381,271	333,001	648,289	2,213,692	826,793	.....	108,306	44,045	716,668	9,817	3,102,232	589	643,843	.....	56,689	9,085,235	1946
1947	286,272	370,893	904,451	2,642,354	742,038	33,762	243,994	133,734	1,522,199	18,754	1,814,050	1,778	229,967	1,087,040	199,115	10,230,401	1947
1948	797,035	98,473	930,235	3,335,759	850,760	22,663	158,253	153,428	971,646	22,786	3,203,028	2,477	369,762	1,153,802	204,741	12,274,848	1948
1949	861,737	46,336	1,068,215	2,694,947	1,762,223	82,859	20,312	53,767	924,104	1,801	4,286,034	893	88,217	1,249,366	20,265	13,161,076	1949
1950	1,125,463	11,186	734,528	1,632,625	4,497,839	257,356	8,263	14,073	1,410,541	4,279	5,430,439	1,948	84,675	2,060,709	85,827	17,359,751	1950
1951	607,230	.....	.....	1,586,142	4,793,574	162,277	14,356	87,489	1,040,300	1,266	3,052,642	1,078	224,884	1,593,176	431,465	13,595,879	1951
1952	962,063	.....	.....	1,547,310	5,443,228	129,502	46,509	181,261	1,573,745	3,115	109,633	1,375	1,616	1,751,006	724,522	12,474,885	1952
1953	1,215,362	.....	.....	1,352,438	5,710,186	176,002	69,638	100,480	598,305	4,931	64,084	4,911	166,612	1,692,796	1,202,769	12,358,514	1953
1954	1,092,313	.....	.....	1,592,457	6,698,302	180,166	44,603	30,932	383,500	2,162	1,437,228	1,997	134,718	1,892,187	469,814	13,960,379	1954
1955	1,285,249	.....	.....	1,251,199	5,805,631	202,880	2,739	1,980	564,672	2,954	1,537,793	.....	284,890	2,378,366	478,934	13,797,287	1955
1956	1,029,810	.....	.....	1,288,516	7,240,023	177,492	1,605	4,889	1,131,462	3,189	799,650	3,976	387,297	3,099,589	668,208	15,835,706	1956
1957	1,227,593	.....	.....	1,067,147	7,255,699	166,717	3,375	4,913	1,360,688	2,174	523,228	859	261,097	3,399,763	528,965	15,802,218	1957
1958	955,344	.....	.....	1,086,057	8,093,554	174,313	108,563	836	404,320	1,005	2,338,857	.....	107,693	3,562,199	67,795	16,900,536	1958
1959	1,112,739	.....	.....	973,013	8,985,442	182,161	57,071	449	616,028	1,014	797,573	.....	350,985	3,782,504	6,867	16,865,846	1959
1960	1,235,407	.....	.....	756,570	8,996,870	156,414	10,739	....	976,024	1,717	676,195	.....	14,962	4,070,581	1,109	16,896,588	1960

Bluefin, Skipjack and Yellowfin are combined under Yellowfin from 1951. Cases are as they run.

California Imports of Frozen Tuna

By Countries of Origin — 1960 and 1961

(In tons, as compiled by U. S. Bureau of Commercial Fisheries from Customs entries.)

COUNTRY	ALBACORE		BLUEFIN		SKIPJACK		YELLOWFIN*		TOTAL	
	1961	1960	1961	1960	1961	1960	1961	1960	1961	1960
	TONS									
Australia	---	196	312	469	---	---	---	-	312	665
Chile	---	---	---	---	--	---	25	---	25	---
Ecuador	---	---	---	---	1,411	566	259	44	1,670	610
Fiji Islands	862	---	---	---	---	---	---	603	862	603
Formosa	77	26	---	---	---	---	437	418	514	444
Fr. W. Africa	108	---	---	---	---	3	504	762	612	765
Japan:										
Altantic Ocean	1,827	3,669	---	---	---	---	2,139	4,473	3,966	8,142
Other areas	12,412	14,008	75	91	448	97	24,844	24,802	37,779	38,998
Mexico	46	---	252	---	430	662	1,145	1,699	1,873	2,361
New Hebrides	580	910	--	---	---	---	347	270	927	1,180
No. Borneo	---	---	---	---	---	94	---	81	---	175
Okinawa	---	---	---	---	---	---	130	45	130	45
Peru	---	---	---	---	2,907	8,291	1,457	3,702	4,364	11,993
TOTAL (As Received)	15,912	18,809	639	560	5,196	9,713	31,287	36,899	53,034	65,981
TOTAL (Round wt. basis)**	16,088	19,153	698	573	5,196	10,646	39,211	42,496	61,193	72,868

*Includes big-eyed tuna.

**Converted to round weight by using factors of 1.11 for gilled and gutted; 1.25 for dressed, heads off; 2.00 for raw fillets; and 2.25 for cooked loins.

SAN PEDRO CANNED TUNA

(Cases)

YEAR	Yellowfin	Bluefin	Skipjack	Albacore	Tonno	Tuna Flakes	Yellowtail	Bonito	TOTAL
1930	262,278	302,660	82,282	143,748	57,110	11,508	16,505	56,544	932,635
1931	182,115	46,462	166,091	144,796	35,514	12,850	1,292	35,997	625,117
1932	275,263	8,510	101,626	52,215	42,247	11,517	2,447	31,901	525,726
1933	258,982	7,580	74,728	49,391	41,200	10,907	1,389	17,892	462,069
1934	317,846	325,350	71,350	82,182	55,163	22,402	3,716	35,245	913,254
1935	306,202	413,630	88,746	107,501	81,660	33,909	17,123	91,080	1,139,851
1936	343,234	311,987	184,930	53,849	57,797	9,906	17,069	68,335	1,047,107
1937	416,611	188,432	276,165	83,123	136,612	34,534	3,352	85,518	1,224,347
1938	273,365	273,358	151,081	265,034	67,404	47,092	27,440	91,830	1,196,604
1939	578,727	191,456	212,042	281,666	70,022	41,104	11,739	139,502	1,526,258
1940	536,391	267,343	306,447	122,484	124,094	85,459	40,861	65,364	1,548,443
1941	308,886	136,333	109,563	73,024	33,530	40,545	26,241	135,594	863,716
1942	214,391	250,685	128,980	128,670	23,479	39,880	16,427	18,115	820,627
1943	303,881	162,844	88,203	187,052	17,239	120,548	67,780	28,815	976,362
1944	341,687	357,531	105,863	125,632	15,365	234,639	16,611	4,206	1,201,534
1945	460,982	275,116	89,279	148,286	16,198	452,292	3,262	31,366	1,476,781
1946	663,814	304,248	202,729	141,629	....	558,026	15,080	73,509	1,959,035
1947	765,426	342,309	209,281	104,726	7,403	417,644	87,934	220,606	2,155,329
1948	969,732	94,190	200,693	290,811	23,009	477,769	120,257	150,147	2,326,608
1949	614,847	38,142	157,373	289,063	78,821	1,330,358	31,072	18,123	2,557,799
1950	742,815	14,786	266,809	586,683	202,368	2,456,705	10,838	3,757	4,284,761
1951	*	*	1,289,523*	437,408	104,235	1,959,227	**	22,926**	3,813,319
1952	*	*	3,203,906*	844,821	84,821	1,345,665	**	61,081**	5,540,033
1953	*	*	2,922,287*	1,044,756	120,625	1,043,893	51,092	52,629	5,235,282
1954	*	*	725,729*	699,810	116,011	4,377,438	9,949	17,177	5,946,114
1955	*	*	672,464*	903,814	160,694	4,039,030#	224	2,277	5,778,503
1956	*	*	565,289*	613,312	122,074	4,717,583#	3,448	530	6,022,236
1957	*	*	501,952*	830,372	102,544	4,942,747#	1,811	2,113	6,381,539
1958	*	*	581,821*	671,668	118,296	5,724,674#	836	00,625	7,197,920
1959	*	*	611,434*	921,065	165,985	6,964,590#	449	56,968	8,720,491
1960	*	*	431,243	990,446	156,052	7,159,901#	---	10,739	8,748,381

*Yellowfin, Bluefin and Skipjack not given separately. #Includes Chunks and miscellaneous. **Yellowtail and Bonito not given separately.

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SARDINES

Volume Dips Again

● California production of canned sardines declined severely again in 1961 to a mere 418,257 cases, the smallest pack since the complete disaster of 1953; and with that exception and 1952 the smallest since the economic collapse of 1921.

The great majority of the 1961 pack—339,350 cases of it—was canned in the Los Angeles Harbor area. Central California, which once counted 1,700,000 cases annually about average, produced only 78,907 cases in 1961.

These data are for the calendar year. Seasonally, they will show some variation, as in 1961 the sardine season was altered and, effective in 1962, will extend through February.

At time of writing at the end of January, 1962, California sardines were quoted at $7.50 to $8.00 per case of 48 talls, 15 oz., natural; and at $10.00 to $10.50 per case of 1-lb. ovals in tomato sauce.

Related items, such as anchovies packed in tomato sauce were priced at $6.50 to $6.75 in 5-oz. talls, 100 per case; or at $7.00 to $7.50 in cases of 48 ovals, 1-lb.

● California's sardine pack of 1961 was based on deliveries of 18,450 tons.

Ovals were the dominant factor in the pack, accounting for 281,578 cases, against 108,273 cases for 1-lb. talls, the second item.

● As the year 1962 got under way, the California sardine industry was preparing to close the longest, and one of the poorest, sardine seasons on record.

After a good deal of controversy, most of which is still very much alive, as to whether the season should be extended or not, the California legislature about mid-1961 enacted a measure stretching the sardine season until March 1, 1962. Closing date had previously been December 11.

In late summer the California Department of Fish and Game made its annual prediction of the season's catch, estimating that between 15,000 and 20,000 tons would be available to fishermen. The forecast turned out to be slightly on the conservative side, as the Department's estimates usually are, but pretty accurate just the same. At the end of January the catch had reached a total of 20,182 tons, and prospects of its going much higher during February were pale, although, as one Fish and Game official remarked, it is always possible that the fleet could catch as many fish in February as for all the rest of the season combined.

According to the U.S. Bureau of Commercial Fisheries, cannery receipts for September were over 8,000 tons; in October the figure was down to under 5,000 tons, in November just over 2,000, in December 3,242 tons and in January under 2,000, so the prospects of a big catch in February were statistically negative.

The thin 1961-62 season, as it stood at the end of January, was about 1,700 tons under last year's, and 15,000 tons under the 1959 figure to date. The commanding preponderance of the catch was landed in San Pedro, which received 16,060 tons or almost 80% of the total. At the same time, 3,443 tons had been landed in Monterey and 615 tons in San Francisco. A big change from the old days in the sardine fishery.

1961 Prices Stable

● With fish in short supply, prices were stable. The ex-vessel price to fishermen remained at $50 per ton throughout the season, at least to the end of January, the figure being $15 higher than the going price last year.

Generally, canners were anxious for fish throughout the season, a fact that was reflected in the stable price. They were able to sell all they could pack and it is a fair guess that the 1962-63 season will possibly begin without too great an inventory on hand.

Although a great deal of research is being done, and has been done, on sardines, their behavior still remains pretty much of a mystery. This season, according to observations by California Fish and Game people, there was not the usual movement of sardines down the coast from the north, a

1961 - CALIFORNIA SARDINE PRODUCTION

Month	Tons Received	Cases 1-lb. Oval 4 doz.	Cases 1-lb. Tall 4 doz.	Cases 8-oz. Oblong 48	Cases 5-oz. All 100s	Cases Other Sizes	Total Cases Actual Count	Total Standard Cases 48 - 1 lb.	Month
August	---	---	---	---	---	---	---	---	August
September*	8, 661	115, 680	55, 980	---	6, 208	6, 336	184, 204	184, 235	September
October	3, 533	66, 468	21, 322	---	---	3, 026	90, 816	91, 158	October
November	3, 589	58, 459	11, 110	---	7, 335	1, 393	78, 297	77, 152	November
December	2, 667	40, 971	19, 861	---	3, 438	1, 979	66, 249	65, 712	December
1961 TOTAL	18, 450	281, 578	108, 273	---	16, 981	12, 734	419, 566	418, 257	1961 TOTAL

*Includes a small amount packed in August.

CALIFORNIA CANNED SARDINE PACK

YEAR	MONTEREY AND SAN FRANCISCO BAY DISTRICT							SAN PEDRO DISTRICT						SAN DIEGO DISTRICT TOTAL	GRAND TOTAL	YEAR
	1-lb. Ovals	1-lb. Talls	½-lb. Cans Misc.	½-lb. Fillets	5-oz. Talls	Other Sizes	TOTAL	1-lb. Ovals	1-lb. Talls	½-lb Cans Misc	5-oz. Talls	Other Sizes	TOTAL			
1912	17,702	....	....	....	....	1,072	18,774	....	....	....	....	....	....	....	18,774	1912
1913	73,686	....	....	....	....	....	73,686	....	....	....	....	....	....	....	73,686	1913
1914	80,834	....	....	....	....	....	80,834	....	....	....	....	....	....	....	80,834	1914
1915	46,625	....	....	....	....	609	47,234	....	....	....	....	....	....	....	47,234	1915
1916	97,100	....	....	....	....	8,532	105,632	2,512	....	....	....	3,296	5,808	54,655	166,095	1916
1917	331,065	....	....	....	....	29,809	363,472	131,347	....	....	....	546,033	679,120	147,602	1,190,194	1917
1918	593,448	....	....	....	....	26,151	619,609	325,587	....	....	....	433,374	758,961	106,418	1,484,979	1918
1919	805,884	....	....	....	....	27,084	832,968	125,784	....	....	....	105,741	231,514	87,033	1,151,515	1919
1920	....	....	....	....	....	....	706,726	....	....	....	....	....	244,900	111,370	1,062,996	1920
1921	287,954	....	....	....	....	10,975	298,929	77,048	....	....	....	3,765	80,813	9,370	389,112	1921
1922	353,188	....	....	....	....	1,479	354,667	340,938	....	....	....	6,096	347,034	27,140	729,034	1922
1923	580,984	....	....	....	....	10,001	590,985	490,064	....	....	....	2,769	492,833	48,205	1,132,023	1923
1924	631,774	....	....	....	....	22,416	654,190	693,133	....	....	....	4,491	697,624	63,624	1,420,128	1924
1925	737,743	....	....	....	....	37,119	774,862	920,191	....	....	....	2,685	922,876	56,041	1,753,779	1925
1926	1,158,133	....	31,483	....	....	2,867	1,192,483	861,088	....	....	....	21,702	861,481	88,419	2,163,755	1926
1927	1,341,872	....	36,363	237	17,808	826	1,397,106	1,046,453	....	....	119,815	....	1,166,268	62,038	2,625,412	1927
1928	1,511,535	4,569	43,754	159	80,252	2,495	1,642,764	945,676	9,652	....	146,724	....	1,099,052	73,514	2,815,330	1928
1929	2,039,526	54,618	16,969	11	75,101	2,187	2,188,412	1,438,159	76,271	8,072	168,039	33,753	1,724,294	28,753	3,941,459	1929
1930	1,579,408	74,043	19,692	391	141,524	3,751	1,818,809	863,254	106,460	2,909	228,965	8,138	1,209,726	40,989	3,069,524	1930
1931	1,004,215	43,722	11,280	....	40,375	337	1,099,929	498,996	59,853	11,931	119,930	1,467	691,637	3,425	1,794,991	1931
1932	459,756	4,467	3,276	88	17,726	2,528	487,481	415,874	36,292	....	54,197	....	506,363	7,641	1,001,845	1932
1933	838,533	47,575	4,604	....	38,013	1,532	930,217	365,750	57,969	....	53,996	4,336	482,051	10,592	1,422,860	1933
1934	1,091,158	48,769	6,527	8,361	67,913	2,675	1,225,413	531,619	119,506	....	164,735	....	815,860	10,463	2,051,736	1934
1935	1,126,466	218,523	39,566	91,525	128,168	27,704	1,631,952	615,808	135,531	25,519	112,264	251	889,373	11,437	2,532,762	1935
1936	1,089,683	202,148	89,280	113,516	124,490	41,946	1,661,063	586,038	259,793	132,488	156,649	749	1,135,717	22,863	2,819,643	1936
1937	679,317	227,806	51,068	73,785	68,164	9,284	1,109,424	761,776	634,215	263,729	200,060	1,509	1,861,289	12,491	2,983,204	1937
1938	721,036	58,168	104,419	97,277	154,488	16,287	1,151,675	600,532	318,691	212,064	162,245	....	1,293,532	19,056	2,464,263	1938
1939	1,248,747	310,168	125,251	141,900	138,217	28,538	1,992,821	627,524	308,896	217,100	178,072	1,520	1,333,112	229	3,326,162	1939
1940	933,955	249,195	158,300	151,518	225,975	18,384	1,737,327	664,241	398,960	230,771	156,681	72	1,450,725	37	3,188,089	1940
1941	1,601,506	1,092,720	234,013	182,703	296,568	54,961	3,462,551	689,210	870,256	216,972	151,384	2,136	1,929,958	2,775	5,395,284	1941
1942	802,795	663,309	8,283	75,386	94,755	59,695	1,704,223	619,881	1,342,030	85,776	90,672	2,918	2,141,277	1,285	3,846,785	1942
1943	1,045,451	832,934	128,438	....	20,208	36,037	2,063,068	400,504	846,314	44,516	26,507	2,235	1,320,076	697	3,383,841	1943
1944	1,051,397	1,088,918	61,828	20,584	374	18,255	2,241,356	434,414	963,551	23,297	....	1,040	1,422,302	....	3,663,658	1944
1945	766,554	951,346	81,019	10,075	....	102,391	1,911,385	444,649	1,480,175	48,215	....	....	1,973,039	....	3,884,424	1945
1946	123,063	171,698	39,376	10,233	....	9,050	353,420	602,008	2,073,679	73,125	....	....	2,748,812	....	3,102,232	1946
1947	108,289	71,691	72,995	155,677	....	4,181	412,833	510,760	802,243	29,327	57,260	....	1,399,590	1,627	1,814,050	1947
1948	400,841	197,865	527,346	16,645	....	994	1,143,691	611,927	970,569	347,991	120,413	....	2,050,900	6,587	3,201,178	1948
1949	869,104	491,196	344,148	12,434	127,741	6,291	1,850,914	822,053	1,112,939	194,690	305,438	....	2,435,120	....	4,286,034	1949
1950	427,416	224,569	6,533	44,843	99,657	24,179	827,197	1,476,695	2,256,213	355,087	451,365	63,882	4,603,242	....	5,430,439	1950
1951	377,754	75,721	2,785	12,285	95,257	7,120	570,922	1,030,080	971,971	74,273	368,611	36,785	2,481,720	....	3,052,642	1951
1952	5,730	10	....	....	....	....	5,740	60,116	34,694	1,513	1,317	2,450	100,090	....	105,830	1952
1953	1,335	....	....	....	....	....	1,335	41,340	18,902	1,773	679	55	62,794	....	64,084	1953
1954	123,215	12,256	65	155	30,516	....	216,207	571,945	488,981	39,426	91,377	29,292	1,221,021	....	1,437,228	1954
1955	292,234	61,128	....	4	3,887	11,340	368,593	578,551	334,740	89,323	164,880	1,706	1,169,200	....	1,537,793	1955
1956	97,760	32,945	....	....	6,712	1,260	138,677	326,852	211,849	22,313	82,059	17,900	660,973	....	799,650	1956
1957	187,819	21,927	2,032	....	....	3,362	215,140	208,949	32,995	9,247	56,897	....	308,088	....	523,228	1957
1958	345,159	134,868	28,930	....	74,885	384	584,226	546,446	819,199	104,495	232,227	52,264	1,754,631	....	2,338,857	1958
1959	226,227	84,667	....	1,518	29,887	1,729	344,028	235,967	131,981	65	44,223	....	412,236	....	756,264	1959
1960	106,346	25,809	....	58	11,046	1,000	144,259	250,273	169,739	21,362	84,257	6,305	531,936	....	676,195	1960
1961	68,332	8,443	....	....	....	2,132	78,907	213,246	99,830	....	16,981	11,944	339,350	....	418,257	1961

*Where sizes are not segregated, they are combined with 1-lb. Talls. Figures for 1961 are given in cases "as they run", without reduction to standard cases. The great majority of the production, however, consists of 48-lb. cases. Figures for "Other Sizes" have been reduced to standard cases, equivalent to cases of 48 - 1-lb. ovals.

NOTE: Figures for 1961 are preliminary totals from official sources. Those for previous years have been corrected from statistics of the California Division of Fish and Game.

Full segregation of the various sizes is not available for years prior to 1926 and is estimated for 1961.

movement which in most years yields some catches. Why this movement did not take place in 1961 no one knows, probably not even the sardines themselves.

Fish and Game researchers found that in the 1961-62 season, during September, October and November, the preponderance of the catches were made well offshore, off San Nicolas Island and the Tanner and Cortez banks, which are situated about 35 or 40 miles southwest of San Clemente Island. There were no fish off Santa Rosa and Santa Cruz Islands, usually a fairly good fishing area. A few fish were caught close to shore from Pt. Dume, above Santa Monica, southward, and some off Santa Catalina Island.

Fishermen reported, moreover, that this season the fish were wild, generally speaking, and this made it impossible to make big catches on single sets. Most catches were taken at the cost of making several sets, so the fishermen worked harder for their fish this year than usually.

Two Sardine "Nations"

● Fish biologists have arrived at a theory, based on blood sampling, that the California supply of sardines comes from not one but two big populations of sardines, the "northern" and the "southern". These populations are calculated to be separated by an unstable boundary line which moves up and down on the map, its median point being somewhere around northern Baja California.

Research to prove or disprove this theory is still going on and more is planned, but if it is found true, much could be explained about the movements of sardines. There is now also a comparatively new hypothesis that there may be a third population possibly inhabiting the waters near the mouth of the Gulf of California.

A scientific cruise is to be undertaken by California Fish and Game Department and U.S. Fish and Wildlife Service scientists to check the existence, habitat and habits of sardine populations. The cruise is to explore the waters in and near the Gulf and make further tests of blood and other factors that would yield valuable information.

Below the border, the 1961-62 sardine season seems to have produced about the same tonnags for the Mexican fleet delivering to canneries in Ensenada and on Cedros Island as U.S. fishermen caught for California canners—around 20,000 tons.

The Mexican fleet in the past year or two has acquired refrigerated vessels which are able to range much farther afield for their fish, and they are fishing farther south this year.

California Sardine Industry

	Catch, Tons	Oil, Gallons	Meal, Tons	Case Pack, 1-lb. Ovals or Equiv.
1946-47 SEASON				
San Francisco District	2,846	65,002	519	6,590
Monterey District	26,818	755,674	3,893	155,329
San Pedro - San Diego District	198,052	3,314,193	26,870	1,931,544
Season TOTALS	227,716	4,134,869	31,182	2,093,463
1947-48 SEASON				
San Francisco District	383	4,440	37	5,793
Monterey District	14,492	260,375	1,756	222,867
San Pedro - San Diego District	95,362	1,458,983	11,762	1,258,660
Season TOTALS	110,237	1,723,798	13,555	1,487,320
1948-49 SEASON				
San Francisco District	1,688	16,590	127	34,197
Monterey District	52,203	783,627	5,566	914,624
San Pedro - San Diego District	127,350	1,436,939	13,301	2,113,897
Season TOTALS	181,241	2,237,156	18,994	3,062,718
1949-50 SEASON				
San Francisco District	17,798	607,004	2,917	81,040
Monterey District	133,570	3,431,286	17,513	1,606,767
San Pedro - San Diego District	186,392	2,402,760	23,343	2,632,305
Season TOTALS	337,760	6,441,050	43,773	4,320,112
1950-51 SEASON				
San Francisco District	---	538,132	2,408	67,698
Monterey District	---	1,132,643	6,443	759,172
San Pedro - San Diego District	---	4,802,054	34,660	4,444,120
Season TOTALS	---	6,472,829	43,511	5,270,990
1951-52 SEASON				
San Francisco District	321	6,350	32	4,342
Monterey District	24,864	327,149	2,217	495,542
San Pedro - San Diego District	101,356	1,121,770	10,855	1,867,978
Season TOTALS	126,541	1,455,269	13,104	2,367,862
1952-53 SEASON				
San Francisco District	---	----	--	---
Monterey District	285	2,345	14	5,740
San Pedro - San Diego District	3,330	15,529	186	64,819
Season TOTALS	3,615	17,874	200	70,559
1953-54 SEASON				
San Francisco District	---	----	--	---
Monterey District	58	410	3	1,335
San Pedro - San Diego District	2,568	12,218	161	61,622
Season TOTALS	2,620	12,628	164	62,957
1954-55 SEASON				
San Francisco District	814	4,550	45	18,883
Monterey District	8,674	86,032	567	192,525
San Pedro - San Diego District	57,654	669,922	5,926	1,180,517
Season TOTALS	67,142	760,504	6,538	1,391,925
1955-56 SEASON				
San Francisco District	2,522	21,114	185	55,686
Monterey District	14,133	168,796	1,143	313,255
San Pedro - San Diego District	56,535	690,106	5,763	1,162,605
Season TOTALS	73,190	880,016	7,091	1,531,546
1956-57 SEASON				
San Francisco District	836	----	--	18,236
Monterey District	5,787	49,410	330	124,393
San Diego District	25,114	276,703	2,585	590,052
Season TOTALS	31,737	326,113	2,915	732,681
1957 SEASON*				
San Francisco District	877	2,115	24	22,030
Monterey District	8,281	33,813	383	185,593
San Diego District	11,332	44,087	935	271,660
Season TOTALS	20,490	80,015	1,342	479,283
1958 SEASON				
San Francisco District	2,799	29,793	241	74,253
Monterey District	21,181	230,905	1,773	487,881
San Pedro - San Diego District	77,587	554,830	7,481	1,694,463
Season TOTALS	101,567	815,528	9,495	2,256.597
1959 SEASON				
San Francisco District	1,780	15,720	134	44,088
Monterey District	13,290	119,704	1,104	308,864
San Pedro - San Diego District	20,294	84,646	1,765	424,548
Season TOTALS	35,364	220,070	3,003	777,500
1960 SEASON				
San Francisco District	617	5,725	56	15,730
Monterey District	5,220	27,326	273	126,697
San Pedro - San Diego District	21,241	128,585	3.310	493,267
Season TOTALS	27,078	161,636	3,639	635,694

*For 1957 and following years seasonal records are included in one calendar year, instead of in portions of two years as formerly recorded. The sardine season now closes statewide on the last day of December.

MACKEREL

In Million-Case Class

- Mackerel canning in California in 1961 once more broke into the select circle of Million-Case Seafoods.

This was the first time mackerel canning in California has attained 7-figure standing since 1957.

Actually, the 1961 pack of 1,353,175 standard cases of 48 lbs. each was the best production of California mackerel since the 1,573,745-case pack of 1952.

Canned mackerel far out-ranked sardines in California canning in 1961, being 3.2 times the 416,915-case sardine pack.

From the standpoint of volume—pounds of food, the mackerel pack was equivalent to 2,750,000 cases of tuna.

- As usually is the case, Jack mackerel held a long lead over the Pacific species in the 1961 pack.

Jack amounted to 948,690 cases, while the Pacific mackerel canned pack reached 404,485.

Market prices of canned mackerel early in January, 1962, were quoted f.o.b. Los Angeles Harbor as: *Jack mackerel,* No. 1 talls, 48, net contents 15 oz., $6.00 to $6.25 per case; *Pacific mackerel,* No. 1 talls, 48, net contents 15 oz., $6.25 to $6.50 per case.

These prices are approximately $1 per case less all around then those prevailing during 1960.

- Tonnage landings of the two species of mackerel in California in 1961 were: Pacific, 17,811 tons; Jack, 51,477 tons.

It is pointed out by statisticians that as between Pacific and Jack mackerel, the catch figures may be at variance by as much as 10%, because the best a fisherman or an inspector can do is estimate the quantity of each species of fish in a hold. When the catch totals are co-ordinated with the pack figures, the results are accurate, for canners must separate the species and pack each under the proper label.

Fishing for mackerel in 1961 presented some differences from previous seasons. Like the sardines, mackerel moved out to sea last year. The big catches were made off San Clemente Island and the Tanner and Cortez Banks, which are well offshore. The previous season, 1960-61, there was much more inshore fishing, particularly north of Santa Monica Bay, around Santa Barbara Island, San Nicolas and Santa Catalina Islands. Three seasons ago, the bulk of the fishing was done all along the coast, near San Pedro and south.

The supply of mackerel was plentiful enough to force the canners to set quotas for virtually the whole season, limits varying from 20 tons to 40 tons. Fishermen's prices, however, held steady throughout the season, unchanging from March to the end of the year at $42.50 per ton. Anchovies held similarly firm at $25 a ton.

California Fish and Game people reported that the size of the 1961-62 fish, both species, individually was larger than in previous years, with virtually no "zero-year" fish brought in. In contrast, there was a large percentage of zero fish in the catches of two years ago. The most spectacular single set of the season was a 90-ton haul.

According to the California Fish and Game year-end statistics on the mackerel catch and pack, the record for the year 1961 was amazing. The increase in the tonnage of Jack mackerel caught, 1961 over 1960, was about 37%. Pacific mackerel chalked up a mere 11% gain over the previous year's catch.

Related species also recorded spectacular gains. The anchovy pack of five-ounce round cans, 100 to the case, was 49,269 in 1961, compared to 18,986 for the previous years, a gain of almost 300%. Squid went up from an insignificant 14,962 cases (one-pound talls) to 115,569—a thumping 687% gain.

1961 California Mackerel Pack

PACIFIC MACKEREL				MONTH	JACK MACKEREL				All Mackerel Cases
Tons Delivered	Cases 1-lb. Cans	Cases Other Sizes	Total Cases		Tons Delivered	Cases 1-lb. Cans	Cases Other Sizes	Total Cases	
325	4,212	...	4,212	January	1,150	11,745	618	12,363	16,575
431	7,031	...	7,031	February	1,831	27,760	11,238	38,998	46,029
348	8,167	...	8,167	March	965	10,760	1,555	12,315	20,482
4,368	71,796	10,170	81,966	April	1,546	17,750	3,867	21,617	103,583
2,699	46,888	6,784	53,672	May	2,926	48,592	10,347	58,939	112,611
466	11,936	762	12,698	June	4,537	78,691	2,051	80,742	93,440
1,677	29,004	...	29,004	July	1,957	34,528	...	34,528	63,532
1,262	22,072	...	22,072	August	1,875	28,244	...	28,244	50,316
1,008	29,920	3,829	33,749	September	4,946	95,832	7,523	103,355	137,104
2,769	58,852	714	59,566	October	11,221	205,401	7,335	212,736	272,302
2,458	52,304	13,273	65,577	November	11,327	181,136	31,925	213,061	278,638
1,402	26,771	...	26,771	December	7,196	131,792	...	131,792	158,563
17,811	368,953	35,532	404,485	TOTALS	51,477	872,231	76,459	948,690	1,353,175

California Mackerel Production by Species

Year	PACIFIC MACKEREL			Total Cases All Mackerel	JACK MACKEREL			Year
	Central California	Southern California	Total Pacific Mackerel		Total Jack Mackerel	Southern California	Central California	
1948	7,269	381,732	389,001	971,646	582,645	429,923	152,722	1948
1949	994	506,424	507,418	924,104	416,686	362,977	53,709	1949
1950	4,155	371,055	375,210	1,410,541	1,035,331	707,858*	327,473	1950
1951	5,448	365,956	371,404	1,040,300	668,896	650,274	18,622	1951
1952	2,509	216,011	218,520	1,573,745	1,355,225	1,335,416	19,809	1952
1953	....	71,222	71,222	598,305	527,083	516,839	10,244	1953
1954	14,495	213,452	227,947	383,500	155,553	80,057	75,496	1954
1955	12,012	194,520	206,532	564,672	358,140	272,658	85,482	1955
1956	102,687	370,071	472,758	1,131,462	658,704	528,317	130,387	1956
1957	117,579	365,500	483,079	1,306,688	877,609	648,182	229,427	1957
1958	14,531	174,360	188,891	404,320	215,429	127,706	87,723	1958
1959	25,779	279,907	305,686	616,028	310,342	176,299	134,043	1959
1960	16,508	278,751	295,259	923,320	628,061	533,935	94,126	1960
1961	*	*	404,485	1,353,175	948,690	*	*	1961

*Regional segregation not available.

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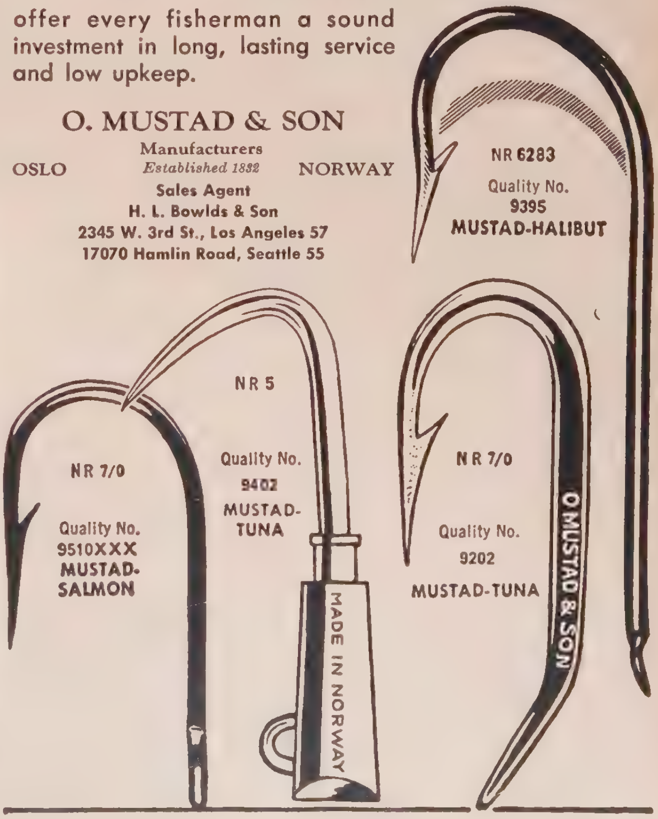

HAWAII

Strategic Fisheries Center

● Hawaii's transition from territorial status to statehood itself was accomplished so far as its fisheries are concerned with almost no problems, no conflicts or controversies. In this it stands in marked contrast to the situation which prevailed, and to some extent still prevails, in Alaska.

Reasons for this of course are plain: In Hawaii for many years the territory and its division of fish and game was in complete control of the fish and wildlife resources of the territory to the limits of territorial waters. This control and authority and jurisdiction continues today unchanged from what it was in territorial days. Before Hawaii became a state, and since, the United States Fish and Wildlife Service, and its bureaus, exercises full authority and control and jurisdiction in the ocean waters beyond the territorial limit of Hawaii's jurisdiction.

You might say the situation has not changed at all, and in a general way that is true; but today the State of Hawaii manifests its authority with a greater degree of vigor and confidence than has been possible in the past.

Notable in the conduct of Hawaiian affairs effecting fisheries is the amiable relationship which exists between the State Division of Fish and Game, the United States Fish and Wildlife Service, and the University of Hawaii. These three agencies, and particularly in their marine biological aspects, maintain a close and harmonious working relationship. They consult together on problems, accept responsibilities for elements of them by common consent, cooperate in their attack upon them, and come to joint conclusions. The harmony marking this relationship and the personalities which have brought it into being and maintained it effectively contributes one of the most promising aspects in support of Hawaii's interest in fisheries.

MICHIO TAKATA is director of the Hawaii State Division of Fisheries, operating under authority of the Fish and Game Commission.

● The Hawaii Division of Fish and Game was transferred July 1, 1961, from the Department of Agriculture to the Department of Land and Natural Resources, one of 18 major departments in the Hawaiian state government. This department has divisions of fish and game, conveyances, forestry, land management, state parks, water and land development. The Division of Fish and Game itself is organized with three branches: fisheries, wildlife, and enforcement. It is planned in the future to subdivide the fisheries branch into a marine section and a fresh water section.

The Division of Fish and Game operates under the authority of a Fish and Game Commission, which has plenary authority to control, provide regulations and in short carry out all of the regulatory and administrative functions, subject only of course to the overriding authority of the legislation. No actual legislation, however, is necessary in the conduct of fish and game affairs. In this the arrangement is comparable to that existing in Alaska.

The State of Hawaii Division of Fish and Game has two principal projects affecting marine fisheries. These are the studies on the development of methods of catching Skip-jack tuna on the high seas by means of monofilament nylon gill nets; and the bait cultural station designed to offset and eliminate the problem of live bait supply for tuna fishermen.

Beyond these two primary projects are a number of other undertakings related to the marine fisheries. In Hawaii it is difficult to draw a clear distinction between commercial fishing and recreational or subsistence fishing because in the ocean waters the same species are in large degree utilized for all three of these purposes. Therefore, the ocean fishery studies and development enterprises to a large degree go along hand in hand whether they are designed to benefit commercial tuna fishing or high seas sport fishing; or whether they are aimed at the introduction of species which may be valuable for bait or for recreational or subsistence fishing.

● In these activities the state has the use of the 65′ research vessel *Makua*. This vessel, while suitable for the purpose to which it is put at present, is inadequate for many of the larger enterprises stations and is expected to be supplemented by a high seas research vessel under the Federal oceanographic and biological research program. It is anticipated that the primary vessel assigned to the mid-Pacific in this duty will be stationed in Hawaii and indirectly will serve to assist a number of the state enterprises.

This includes the life history studies of the Big-eye Scad, known in the

Hawaiian Islands as the *Akule,* and one of the most important species in the state waters. The study is primarily seeking the causes of the declining trend in catch and undertaken to determine if it is due to a reduction in the population below the level of sustained yield, or whether it may be due to reduction in fishing efforts. Other life history studies are being conducted in the case of the Moi, another of the fish important in the subsistence and in-shore fisheries which are so important to the Hawaiian population. The life history of the Hawaiian spiny lobster is also undergoing careful examination.

The Hawaii Division of Fisheries is actively engaged in the creation of artificial fish shelters in areas where coastal currents render the bottom unstable and unsuited for marine growths, while coral or rocky sectors are absent. Approximately 500 old automobile bodies have been placed in strategic positions of this kind, carefully anchored in place with concrete blocks and kept under regular observation. A system of determining an index for fish population in these areas has been built on observations by skin divers under controlled conditions. Where one of the reefs showed an index of 38 before the cars were placed, in seven months the index had risen to 1500. At nine months it had fallen to 800, evidently because of migrations of the older and larger fish to other waters. At the end of 12 months the index stood at 900. These numerical figures stand for pounds of fish per acre of sea bottom brought under observation by the skin divers.

● The introduction of exotic marine fish from other regions of the Pacific is being actively pursued by the Hawaiian Division of Fish and Game. Michio Takata, its Director, vigorously denies the charge which he says is often heard among biologists that Hawaii is "introduction happy". He contends that the numbers of species of fish in Hawaiian waters could be greatly increased without damage by bringing suitable varieties from similar waters to the Hawaiian environment. He points out that the native population is unbalanced in that the fish consist too largely of the herbivores or plant feeders, and too few of the carnivores, or meat feeders.

The introductions generally have been species of primary interest to the sportsmen, but also of substantial interest to the subsistence fisherman. This is traceable to the lack that the funds utilized have largely been derived from the Dingall-Johnson funds. Species introduced include California abalone, various snappers and groupers from other parts of the Pacific area, and a number of fresh water fishes which also subsist in brackish estuaries and have possibilities as tuna bait fish.

Introduction of the Manila clam from Japanese stock is being actively considered by the Hawaiian Division of Fish and Game. Also, the Division anticipates that within a short time it will be able to initiate a study by a mainland expert on the economic possibilities of utilizing the astonishingly heavy stocks of Atlantic oysters, *Ostrea virginica,* which have developed in Pearl Harbor over a period of many years. Their introduction is somewhat obscure, and probably tracts to some naval officer interested in a local supply of oysters. As the waters of Pearl Harbor are seriously polluted, the use of this resource cannot be permitted at present. The movement of oysters to pure water areas for further growth appears as a possibility. Commercial value of the oyster stock available in Pearl Harbor is said to run in the neighborhood of $2 million.

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(Data as of January 1, 1962)

INTERNATIONAL

Inter-American Tropical Tuna Commission, Scripps Institute of Oceanography, La Jolla, Calif.—Chairman, Juan L. Obarrio; Director of Investigations, Dr. M. B. Schaefer.

International North Pacific Fisheries Commission, 6640 N. W. Marine Drive, Vancouver 8, B. C.—Chairman, Edward W. Allen; Executive Director, Roy I. Jackson.

International Pacific Halibut Commission, Fisheries Hall No. 2, University of Washington, Seattle 5, Washington.—Chairman, Dr. William M. Sprules; Director of Investigations, H. A. Dunlop.

International Pacific Salmon Fisheries Commission, Federal Building, New Westminster, B. C.—Chairman, Senator Thomas Reid; Director of Investigations, Loyd A. Royal.

United States

U. S. Fish and Wildlife Service, Department of the Interior, Washington 25, D. C.—Commissioner, Clarence L. Pautzke; Assistant Commissioner, Thomas F. Rice.

Bureau of Commercial Fisheries, U. S. Fish and Wildlife Service, Washington 25, D. C.—Director, Donald L. McKernan; Assistant Director, Harold E. Crowther.

Pacific Regional Office, 6116 Arcade Building, 1319 2nd Avenue, Seattle 1, Wash.—Regional Director, Samuel J. Hutchinson; Acting Regional Director, Ralph C. Baker (Sept. 1961 - June 1962).

Biological Laboratory, 2725 Montlake Blvd., Seattle 2, Wash.—Laboratory Director, Clinton E. Atkinson.

Branch of Reports, 2601 Market Street, Seattle 7, Wash.—Scientist in Charge, F. Bruce Sanford.

Columbia Fisheries Program Office, 827 N. E. Oregon St., P. O. Box 4332, Portland 8, Oregon—Program Director, L. Edward Perry.

Exploratory Fishing and Gear Research Base, 2725 Montlake Blvd., Seattle 2, Wash.—Base Director, Dayton L. Alverson.

Fish Passage Research, Sand Point Naval Air Station, Seattle 15, Wash.—Program Director, Gerald B. Collins.

Fisheries Enforcement, 6113 Arcade Building, 1319 2nd Ave., Seattle 1, Wash.—Supervisory Fishery Management Agent, Gomer W. Hilsinger.

Marine Mammal Biological Laboratory, Sand Point Naval Air Station, Seattle 15, Wash.—Laboratory Director, Ford Wilke.

Marine Mammal Resources, 6134 Arcade Building, 1319 2nd Avenue, Seattle 1, Wash.—Program Director, C. Howard Baltzo.

Market News and Statistics, 706 Federal Office Bldg., Seattle 4, Wash.—Supervisory Market News Reporter, Charles M. Reardon.

Office of International Relations, 6120 Arcade Building, 1319 2nd Avenue, Seattle 1, Wash.—Foreign Training Officer, Harvey L. Moore.

Office of Loans and Grants, 6112 Arcade Building, 1319 2nd Avenue, Seattle 1, Wash.—Regional Loan Supervisor, Edwin C. Hinsdale.

Seattle Marketing Office, 2601 Market St., Seattle 7, Wash.—Acting Station Chief, Carlos E. Moore.

Technological Laboratory, 2725 Montlake Blvd., Seattle 2, Wash.—Laboratory Director, Maurice E. Stansby.

California Area Office, 101 Seaside Avenue, Terminal Island, California—Area Director, Donald R. Johnson.

Biological Laboratory, P. O. Box 271, La Jolla, California—Director, E. H. Ahlstrom.

Biological Laboratory, P. O. Box 6121, Point Loma Station, San Diego, Calif.—Director, G. V. Howard.

Biological Laboratory, Jordan Hall, Stanford University, Stanford, Calif.—Director, O. E. Sette.

Branch of Marketing, Old Mint Bldg., Room 214, Fifth & Mission Streets, San Francisco, Calif.—A. R. Ferrandini.

Branch of Marketing, 101 Seaside Avenue, Terminal Island, California—Fishery Marketing Specialist, S. Ross Hatton.

Fishery Research Station, 101 Seaside Avenue, Terminal Island, Calif.—C. J. Carlson.

Loans & Grants Office, 101 Seaside Avenue, Terminal Island, California—Lester T. Bradbury.

Market News Branch, 208 Post Office Bldg., San Pedro, Calif.—Supervisory Market News Reporter, Victor J. Samson.

Alaska Regional Office, P. O. Box 2481, Juneau, Alaska—Regional Director, Harry L. Rietze; Asst. Regional Director, Frank T. Piskur; Administrative Officer, Francis W. Stokes.

Auke Bay Biological Laboratory, P. O. Box 1155, Auke Bay, Alaska—Laboratory Director, Dr. George Y. Harry, Jr.

Fishery Products Laboratory, 622 Mission St., Ketchikan, Alaska—Chemist, Jefferson Collins.

Hawaii Area Office and Biological Laboratory, P. O. Box 3830, Honolulu 12, Hawaii—Director, John C. Marr.

Loans and Grants Office, P. O. Box 3830, Honolulu 12, Hawaii—Harold T. Smither.

Canada

Canada, Department of Fisheries, Sir Charles Tupper Bldg., Confederation Heights, Ottawa, Ontario, Canada—Minister, J. Angus MacLean; Deputy Minister, George R. Clark.

Canada, Department of Fisheries, Pacific Area, 1110 West Georgia Street, Vancouver, B. C.—Director, Pacific Area, W. R. Hourston; Asst. Directors, J. C. Stevenson, T. Taylor.

Fisheries Research Board of Canada, Ottawa, Canada—Chairman, Dr. John L. Kash, Ottawa; Biological Station, Nanaimo, B. C., Director, Dr. A. W. H. Needler; Technological Station, Vancouver, B. C., Director, Dr. H. L. A. Tarr; Pacific Oceanographic Group, Nanaimo, B. C., Oceanographer-in-Charge, Dr. J. P. Tully.

STATE

State of Alaska, Department of Fish and Game, Subport Building, Juneau, Alaska—Commissioner, Walter Kirkness; Deputy Commissioner, Edward S. Marvich; Chairman, Alaska Board of Fish and Game, Roy S. Selfridge, Ketchikan, Alaska.

State of California, The Resources Agency of California, Department of Fish and Game, P. O. Box 2448, Sacramento 11, Calif.—Director, Walter Shannon; Administrator, William E. Warne; Chief, Marine Resources Branch, Richard S. Croker.

State of Hawaii, Division of Fish and Game, Department of Land & Natural Resources, P. O. Box 5425, Honolulu 14, Hawaii—Director, Michio Takata.

Pacific Fisheries Organizations

(Data as of January 1, 1962)

State of Oregon, Fish Commission, State Office Bldg., Portland 1, Oregon —Chairman, Herman P. Meierjurgen; Director, Robert W. Schoning.

State of Washington, Department of Fisheries, General Administration Building, Olympia, Washington—Director, George C. Starlund; Asst. Director, Edward Mains.

College of Fisheries, University of Washington, 204 Fisheries Center, Seattle 5, Washington—Dean, Dr. Richard Van Cleve.

Fisheries Research Institute, College of Fisheries, Fisheries Hall, No. 2, University of Washington, Seattle 5, Wash.—Director, Dr. William F. Royce.

Pacific Marine Fisheries Commission, 741 State Office Building, 1400 S. W. Fifth Avenue, Portland, Oregon —Chairman, George C. Starlund; Executive Director, Alphonse Kemmerich.

Province of British Columbia, Dept. of Recreation and Conservation, Commercial Fisheries Branch, Parliament Buildings, Victoria, B. C. — Minister, Hon. Earle C. Westwood.

GENERAL INDUSTRY

American Seafood Distributors Association, 821 15th Street, N. W., Washington 5, D. C. — President, C. Miles Reinke; Executive Secretary, Elizabeth Guhring.

California Fisheries Council, 99 Westbrook Ave., Daly City, Calif.—President, Albert D. Levy; Secretary-Treasurer, R. T. Barnes.

Fisheries Association of British Columbia, Room 201, 325 Howe Street, Vancouver, B. C.—Chairman, J. M. Buchanan; Secretary-Manager, K. M. Campbell.

Fisheries Council of Canada, Room 703, 77 Metcalfe Street, Ottawa 4, Ontario—President, R. N. Clouston, Montreal, Quebec; Manager, C. G. O'Brien.

National Canners Association, 1133 20th St., N. W., Washington 6, D. C. —President, John C. Hemingway; Executive Vice President, Milan D. Smith; Assistant to the Executive Vice President, Fishery Products Division, George E. Steele, Jr.

National Canners Association, N.W. Branch, 1600 Jackson St., Seattle, Wash. — Chairman of the Advisory Board, Aubin R. Barthold; Manager, W. V. Yonker; Asst. Manager, Dr. G. Ivor Jones.

National Fisheries Institute, Inc., 1614 Twentieth St., N. W., Washington, D. C.—President, Harvey H. Bundy, Jr., Gloucester, Mass.; General Manager, Chas. E. Jackson.

Northern California Sea Food Institute, 2677 Larkin St., San Francisco, Calif.—President, Budd Thomas; Secretary-Manager, John Gilchrist.

Oyster Institute of North America, 6 Mayo Avenue, Bay Ridge, Annapolis, Maryland—Director, David Wallace.

Pacific Fishery Biologists, Scripps Institute of Oceanography, La Jolla, Calif.—President, Gordon Broadhead, Inter-American Tropical Tuna Commission, La Jolla, Calif.; Secretary-Treasurer, Edward Greenhood, California Department of Fish and Game, Terminal Island, Calif.

Pacific Fisheries Conference, 1308 Northern Life Tower, Seattle, Wash. —Acting Chairman, Edward W. Allen.

Pacific Fisheries Technologists, 6640 N. W. Marine Drive, Vancouver 8, B. C.—Chairman, H. L. A. Tarr; Secretary-Treasurer, J. S. M. Harrison.

Shrimp Association of the Americas, Walsh Building, 910 East Levee St., Brownsville, Texas—Executive Secretary, J. E. Barr.

OPERATORS

Association of Pacific Fisheries, 30 Colman Bldg., Seattle 4, Washington. —President, A. R. Barthold; Executive Secretary, Herald A. O'Neill.

California Fish Canners Association, Inc., Ferry Building, Terminal Island, Calif.—President, Gerald Cigliano; Executive Director, Charles R. Carry.

Columbia River Salmon and Tuna Packers Association, P. O. Box 60, Astoria, Ore. — Executive Secretary, James H. Cellars.

Conference of Washington State Tuna Packers, 2000 Alaskan Way, Seattle, Wash. — Chairman, R. E. Silver.

Monterey Fish Processors Association, P. O. Drawer 72, Monterey, Calif.—President, David McCafferty; Secretary-Treasurer, Morris Ballo.

Northwest Fisheries Association, 6 Marion St., Seattle 4, Wash.—Pres dent, Douglas W. Hager; Executiv Secretary, Charles R. Pollock.

Northwest Salmon Canners Assoc ation, Colman Building, Seattle Wash.—President, Robert F. Morga Secretary-Treasurer, H. A. Daube speck.

Olympia Oyster Growers Associ tion, Rt. 1, Box 476, Olympia, Wash ington.

Pacific Coast Oyster Growers Asso ciation, 66 Marion Street, Seattle Wash.—President, R. M. Bailey, S attle, Wash.; Vice President, Richar C. Hicks, Olympia, Wash.; Secretar Treasurer, Charles R. Pollock.

Pacific Herring Packers Associ tion, 1844 Westlake North, Seattle Washington.

Puget Sound Salmon Canners, Inc Colman Building, Seattle, Wash. – President, John N. Plancich, Execu tive Secretary, Herald A. O'Neill.

Southern California Fisheries Asso ciation, 1248 East 6th St., Los Angel 21, California.—President, Norma Burgess; Secretary, Bart A. Ghio.

Southern California Fishermen Association, 1140 N. Harbor Driv Room 9, San Diego 1, Calif.—Pres dent, Victor Nigro; Secretary-Trea urer, Louis V. Nigro.

West Coast Shrimp Producers A sociation, 1440 Jackson St., Seattl Wash.—Chairman, Ivar Wendt; Se retary, Steve Sarich.

Willapa Harbor Oyster Growe Association, Bay Center, Washingto —President, Jack Wiegardt; Secretar Pete Spencer.

VESSEL OWNERS

Alaska Trollers Association, 25 First Ave., Ketchikan, Alaska—Pres dent, Victor Klose.

Alaska Herring Skippers Associ tion, 1628 9th Avenue, Seattle Wash.

American Tunaboat Association, Tuna Lane, San Diego 1, California- Manager, August Felando.

California Commercial Fisherme Association, Inc., 745 S. Seasid Terminal Island, Calif.—Presiden Jack Hansen.

Drum Seiners Association, Inc., 1

DIRECTORY

Pacific Fisheries Organizations

(Data as of January 1, 1962)

Hawthorne Road, Bellingham, Wash.—President, Joe Hanson; Secretary-Treasurer, Peter Zuanich.

Fishermen's Cooperative Association, Fishermen's Wharf, Berth 73, San Pedro, Calif.—President, Andrew Tipich; Manager, Anthony Nizetich.

Fishing Vessel Owners' Association of British Columbia, 192 E. Hastings St., Vancouver, B. C.—Vice President and Chairman, Fred Kohse; Secretary-Manager, Harold A. Christenson.

Fishing Vessel Owners Association, Pier 59, Seattle, Washington — President, Capt. Ole Binkvold; Manager, Harold E. Lokken.

Grays Harbor Gillnetters Association, 1718 Sumner Ave., Aberdeen, Washington.

Northwest Trawlers Association, Inc., Fishermen's Terminal, Seattle 99, Wash.—President, E. G. Westman.

Puget Sound Gillnetters Association, Rt. 3, Box 294, Anacortes, Wash.—President, Donald A. Graham; Secretary-Treasurer, David Milholland.

Purse Seine Vessel Owners Association, 5301 North Ruby St., Tacoma, Wash.—Secretary, Nick Mladinich.

Tuna Boat Owners Association, Kewalo Basin, Honolulu, Hawaii—President, Oliver Kinney; Vice President, Kenji Okada; Secretary-Treasurer and Manager, William A. Kanakanui.

Washington Reef Net Owners Association, Lumni Island, Wash.—Executive Secretary, Glenn H. Schuler.

COOPERATIVES

Angoon Community Association, dba, Hood Bay Salmon Company, 715 Hoge Building, Seattle, Wash.

Annette Island Canning Company, P. O. Box 106, Metlakatla, Alaska.

Barrow Cooperative Association, Barrow, Alaska.

Bristol Bay Fish Producers Association, P. O. Box 105, Naknek, Alaska.

Commercial Fishermen's Inter-Insurance Exchange, 413 West 7th St., San Pedro, Calif. Branch Offices: Fishermen's Terminal, Seattle, Wash.; 51 Ninth Street, Astoria, Ore.; Post Office Box 434, Eureka, Calif.

Copper River Co-Op Co., Inc., 559 Colman Building, Seattle, Washington.

Cordova Aquatic Marketing Association, Inc., Box 359, Cordova, Alaska—President, John Goeres.

Crab Boat Owners' Association, 2907 Jones Street, San Francisco, Calif.

Federated Fishermen's Association, Inc., 745 South Seaside Street, Terminal Island, Calif.

Fishermen's Cooperative Association, Inc., Pier 59, Seattle, Wash.—Branches: Neah Bay and Westport, Wash.; Charleston, Oregon.

Fishermen's Cooperative Federation, Box 340, Prince Rupert, B. C. and 2195 Commissioner St., Vancouver 6, B. C.—General Manager, T. H. Sorensen; Secretary, K. F. Harding.

Fishermen's Marketing Association, 2334-C Maple Lane, Eureka, Calif.

Fishermen's Marketing Association of Oregon, Inc., P. O. Box 838, Astoria, Oregon—Secretary, A. H. Wright.

Fishermen's Marketing Association of Washington, Fishermen's Terminal, Seattle 99, Wash. — President, Dan Luketa.

Halibut Producers Cooperative, 4501 Shilshole Ave. N.W., Seattle 7, Wash. — President, L. H. Chaney; Manager, W. B. Johnson.

Homer Fishermen's Cooperative Association, Homer, Alaska.

Hydaburg Cooperative Association, 715 Hoge Building, Seattle 4, Wash.

Keku Canning Company, 715 Hoge Building, Seattle 4, Washington.

Kenai Peninsula Fishermen's Cooperative Association, Box E, Cohoe, Alaska.

Klawock Cooperative Association, Klawock, Alaska.

Kodiak Fish Producers Association, Inc., P. O. Box 962, Kodiak, Alaska.

Monterey Purse Seiners Association, 9 Municipal Wharf, Monterey, Calif. —President, Anthony E. Lucido; Secretary, Joe Cardinale.

Ninilchik Fishermen's Cooperative Association, Clam Gulch, Alaska.

Prince Rupert Fishermen's Cooperative Association, P. O. Box 340, Prince Rupert, B. C.—Secretary and Manager, K. F. Harding.

Purse Seine Vessel Owners Marketing Association, Fishermen's Terminal, Seattle 99, Wash.

Salmon Trollers Marketing Association, Box 137, Fort Bragg, Calif.—President, Elwin Cox.

San Diego Cooperative Fishermen's Association, 410 Harbor Lane, San Diego, Calif.

Smelt Fishermen's Association, P. O. Box 395, Clatskanie, Ore.

United Fishermen's Marketing Association, P. O. Box 1035, Kodiak, Alaska.

Washington Crab Producers, Inc., 109 Dock Street, Westport, Wash.

Western Alaska Cooperative Marketing Association, Box 211, Dillingham, Alaska.

Yukon River Fisherman Cooperative Association, 115 Beeson Building, P. O. Box 278, Edmonds, Wash.

UNIONS

Alaska Fishermen's Union, SIUNA, AFL-CIO, P. O. Box 186, Bellingham, Wash.—Agent, Jack Wood.

Alaska Fishermen's Union, SIUNA, AFL-CIO, 450 Harrison Street, San Francisco 5, Calif.

Alaska Fishermen's Union, SIUNA, AFL-CIO, 214 Astoria Building, 1418 Commercial, Astoria, Ore.

Alaska Fishermen's Union, SIUNA, AFL-CIO, P. O. Box 1536, Ketchikan, Alaska.

Alaska Fishermen's Union, 2505 First Avenue, Seattle, Wash.—Secretary-Treasurer, George Johansen.

Alaska Native Brotherhood, Grand Camp, Post Office Box 722, Sitka, Alaska.

Amalgamated Meat Cutters and Butcher Workmen of North America, AFL-CIO. Locals Nos.:

115—3012 16th St., San Francisco 3, Calif.
229—227 E Street, San Diego 1, Calif.
274—846 South Union Avenue, Los Angeles 17, Calif.
445—Box 496, 3910 "E" Street, Eureka, Calif.
516—1838 El Camino Real, Burlingame, Calif.
551—125 West "E" Street, Wilmington, Calif.
556—220 W. Carrillo Street, Santa Barbara, Calif.

Pacific Fisheries Organizations

(Data as of January 1, 1962)

324—135 East 6th Street, Eugene, Ore.
81—2800 First Avenue, Seattle 1, Wash.
158—Post Office Box 9, Bay Center, Wash.
247—203 Medical Building, Bellingham 11, Wash.
494—510 Realty Building, Spokane 4, Wash.

Bering Sea Fishermen's Union, SIU, AFL-CIO, Dillingham, Bristol Bay, Alaska—Secretary-Treasurer, Jim Downey.

Bristol Bay Cannery Workers, Local 46, SIU, AFL-CIO, Dillingham, Bristol Bay, Alaska—Business Agent, Jim Downey.

Columbia River Fishermen's Protective Union, 322 10th St., Astoria, Oregon—Executive Secretary, William Westerholm.

Copper River & Prince William Sound Cannery Workers Union (Independent), P. O. Box 939, Cordova, Alaska—Secretary-Treasurer, Richard Janson, Jr.

Cordova District Fisheries Union (Independent), Box 939, Cordova, Alaska—Executive Secretary, Richard Janson, Jr.

Deep Sea Fishermen's Union of the Pacific, 5215 Ballard Ave., Seattle, Wash.—Secretary-Treasurer, Clarence R. Nordahl.

Fish Plant Workers Union of Newport, SIU, AFL-CIO, Beverly Beach, Agate Beach, Oregon—Secretary, Bertrice Parsons.

Fisheries Division, International Longshoremen's and Warehousemen's Union (Independent), 150 Golden Gate Avenue, San Francisco, Calif. Northwest Regional Office: 84 Union St., Seattle, Washington.

Local 3—84 Union St., Seattle 1, Wash.—Secretary, Joe Jurich.
Local 30—Box 379, Ketchikan, Alaska.
Local 33—806 South Palos Verdes, San Pedro, Calif.—Secretary, John J. Royal.
Local 41—P. O. Box 873, Juneau, Alaska.
Local 83—P.O. Box 603, Pelican, Alaska.
Local 85—P. O. Box 483, Petersburg, Alaska.
Local 87—P.O. Box 768, Wrangell, Alaska.
Local 37—Alaska Cannery Workers, 213 Main St., Seattle, Wash.—Secretary, Amor Guerzon.

Grays Harbor Gillnetters Association, 1718 Sumner Ave., Aberdeen, Washington.

Grays Harbor Gillnetters Union, 1718 Sumner Ave., Aberdeen, Wash. —Chairman, Eldon Lapacek; Secretary-Treasurer, Walfred Hendrickson; Board Chairman, Andy Niemi.

Hawaii International Longshoremen's and Warehousemen's Union, Regional Office, 451 Atkinson Drive, Honolulu, Hawaii.

Puget Sound Cannery Workers Union, 503 35th Street, Anacortes, Wash. — Business Agent, Hazel V. Larsen.

Seafarers' International Union of North America, AFL-CIO, 450 Harrison St., San Francisco, Calif.—International Representative, John Hawk.

Seine & Line Fisherman's Union, Monterey County, AFL-CIO, 233 Alvarado St., Monterey, Calif.—Business Agent, John Crivello.

Seine & Line Fishermen's Union of San Pedro, SIU, AFL-CIO, 446 West 9th St., San Pedro, Calif.—Secretary-Business Agent, John Calise.

Shoalwater Bay Oyster Workers Union, Local No. 14, SIU, AFL-CIO, Nahcotta, Washington—Secretary, Ott Rutzer.

United Cannery Works of Kodiak Island, SIU, AFL-CIO, P. O. Box 417, Kodiak, Alaska—President, Harry Lindgren; Secretary-Treasurer, Kimball Poland.

United Fishermen and Allied Worker's Union, 138 E. Cordova St., Vancouver 4, B. C.—President, H. (Steve) Stavenes; Secretary, Homer Stevens; Business Agent, Alex Gordon; Northern Representative, R. L. Gardiner, Metropole Hall, 3rd Ave., Prince Rupert, B. C.

Vancouver Fishermen's Local—Business Agent, M. J. Canic, 138 E. Cordova.
Vancouver Shoreworkers Local—Jack Cook, 1932 W. 6th.
Steveston Fishermen's Local—Jim Ross, Box 308.
Steveston Shoreworkers Local — Ted Foort, 138 E. Cordova.
Victoria Local — F. J. Smele, 1852 Chestnut St.
New Westminster Local — Harold Wilcox, 138 E. Cordova.
Annieville Local—Allan Larsen, 9751 116th St., North Surrey.
Sunbury Local—Hideo Onotera, 8655 River Road, Rt. 1, New Westminster.
Ladner Local—Nick Spilchen, Ladner.
Woodwards Slough Local—Jack Hill, 947 Finn Rd., Rt. 3, Richmond.
Fort Langley Local—E. Burnell, Rt. 5, Langley Prairie.
Albion Local — Tarmo Puska, Websters Corners.
Nanaimo Local—F. W. Meabry, 431 Wharton St., Nanaimo.
Gulf Islands Local — Dave Jenkins, Gabriola Island.
Quathiaski Local—Jack Hewison, Rt. 1, Campbell River.
Pender Harbour Local—W. P. Malcolm, Madeira Park, B. C.
Westview Local—John Chambers, Box 581, Westview.
Namu Local—Steve Pawliuk, Namu.
Skidegate Local—Ed Regnery.
Sointula Local—Bill Mackie, Sointula.
Alert Bay Local—Don Pepper, Alert Bay.
Bella Coola Local—Glen McKay.
Sidney Local—Jack Reid, Swartz Bay Rd., Sidney, B. C.
Gibsons Local—Del Triggs.
Masset Local—Pat Setso.
Bella Bella Local—Al Newman.
Prince Rupert Fishermen's Local—R. L. Gardiner, Metropole Hall, Prince Rupert.
Prince Rupert Shoreworkers' Local—Box Jones, 1435 Plaza, Prince Rupert.
Port Simpson Local—Donald Sankey, Port Simpson.
Klemtu Local—Percy Starr, Kelemtu.

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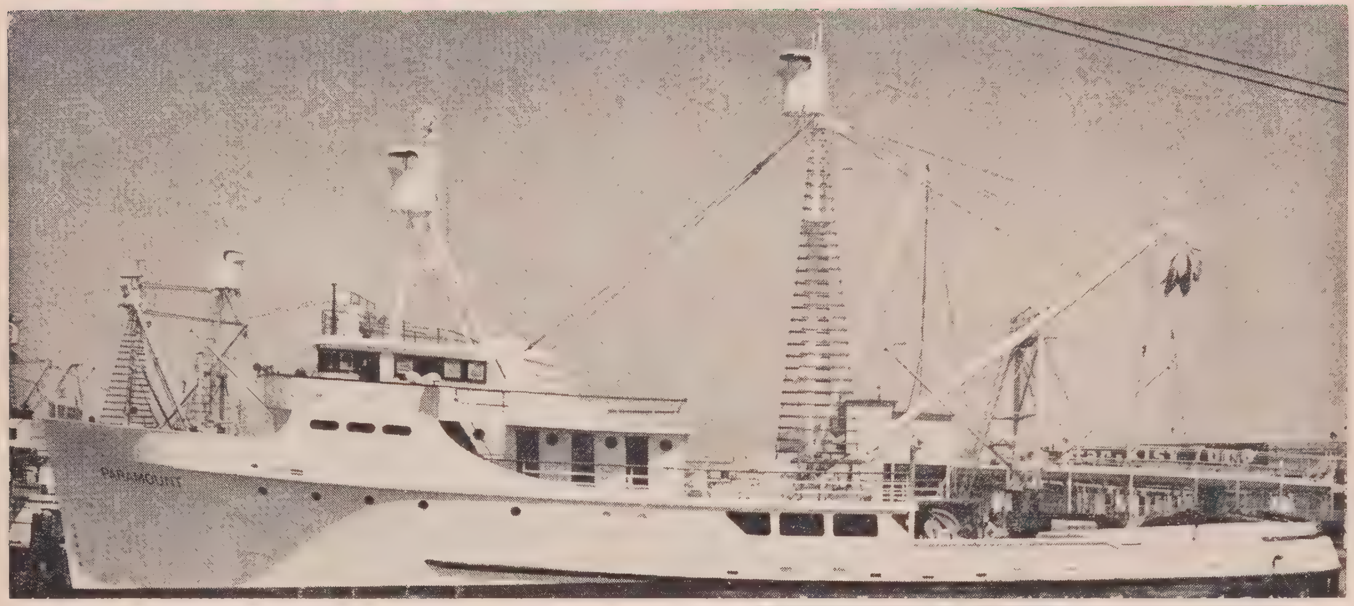

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JAPAN

World-Wide Growth

By KENJI SAKAI

● Vigor of Japan's fishery economy was well maintained in 1961, and the year 1962 was entered with favorable auspices and good promise.

In 1961 there took place in Japan a number of meetings of international importance to fisheries. These began in January with the fourth annual meeting of the International Fur Seal Commission. Then the fifth annual assembly of the Northwestern Pacific Soviet-Japanese Fisheries Commission lingered from February until May.

The first meeting of the International Fishery Research Ship Forum was held in September with invited guests from a number of fishing countries of the world.

The eighth annual conference of the International North Pacific Fisheries Commission and its preliminary committee meetings were held in October and November. At this meeting American and Canadian attention to Japanese capture of halibut was referred to for the first time, and became a point of prime attention for the conference.

Salmon—

● The Soviet-Japanese treaty conference of 1961 established the quota for salmon catch by the Japanese in treaty waters at 65,000 tons (metric tons are referred to herein unless otherwise stated), as compared with a quota of 67,500 tons in the previous year.

Of the 65,000 tons, 53,600 tons were allocated to the mothership operations and 11,400 tons to the Japan-based smaller gillnet boats.

The mothership operation consisted of 12 factoryships accompanied by 410 catcher boats, assigned as in the previous year.

An increased amount of highly efficient monofilament nylon gillnet was employed, and it was noted that some of the catcher boats were being equipped with gyro-compasses and other advanced nautical instruments.

The fleet left Japan on May 21, but regardless of the late start all vessels returned by the end of July, two weeks earlier than in 1960. There were no bad storms during the whole season.

When the fleet first reached the fishing ground the vessels found unusually dense migrations of Red salmon, more closely concentrated than in the previous year. During the first half of June especially there was excellent fishing around 180° West Longitude; and thereabouts many catchers were able to take half of their quota by the end of June. Glutted with Red Salmon, some units began to shift westward for other species.

Fishing conditions for Chum and Pink salmon were found better than in the previous year but, due to the limited catch quota, much of the Pink and Silver salmon available was not captured.

The fishing conditions mentioned above set the pattern for the species composition of Japan's 1961 pack. Total canned by the eight firms operating factoryships and the 65 land salmon canneries was 2,087,512 cases, basis of 48 lbs. The composition by species:

Species	*Cases*
Red	1,074,950.5
Pink	974,610.5
Silver and King	36,439.0
Chum	1,512.0
Total	2,087,512.0

The pack of Red salmon exceeded the previous record of 1,061,307 cases packed in 1957 when the catch quota and the fishing and packing equipment was greater in numbers.

● The great salmon offering of 1961 was announced by the joint sales company on September 18 at a base price of $38.00 per case of 96 half-pound cans, fob. Japan. This compares with opening price of $42.10 in 1960 and $40.80 in 1959.

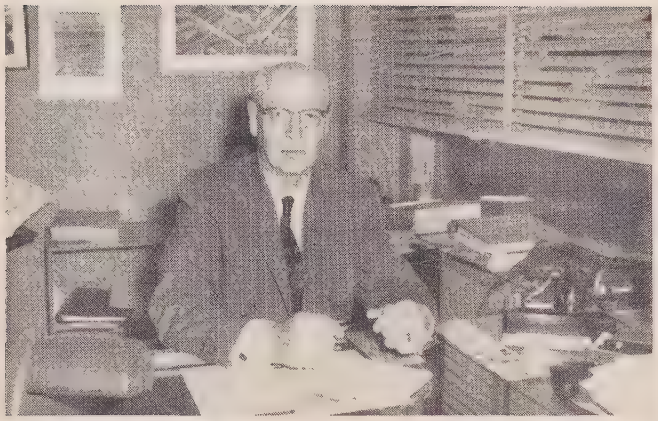
A feature of the 1961 sale was that a separate price was made for goods canned from frozen fish. The base price for this grade in full cases of halves was $36.60. Other incentives in selling conditions favorable to British buyers were offered, but the deadline for accepting the offer expired on the last day of September, 1961, with

Japanese Pacific Salmon Catch by Fishery and Species—1961

(In Metric Tons of 2,200 lbs.)

Fishery	Red	Chum	Pink	Silver	King	TOTAL
Mothership gillnets	34,901	13,013	4,908	647	105	53,574
Shore-based gillnets (1)	1,798	13,118	49,316	3,632	362	(2) 68,226
Shore-based longlines (3)	39	2,723	11,155	7	39	13,963
Coastal traps (4)	---	257	9,644	---	--	9,901
TOTAL	36,738	29,111	75,023	4,286	506	145,664

(1) Fished south of 48° N and east of Kurile Islands and Hokkaido. (2) Includes 11,355 metric tons taken in Soviet-Japan treaty waters, between 48 and 45° N. (3) Fished south of 45° N, outside of treaty waters. (4) Data for period Jan.-July, 1961.



J. LYNN MILLER, president, **Nordby Supply Co., Seattle**

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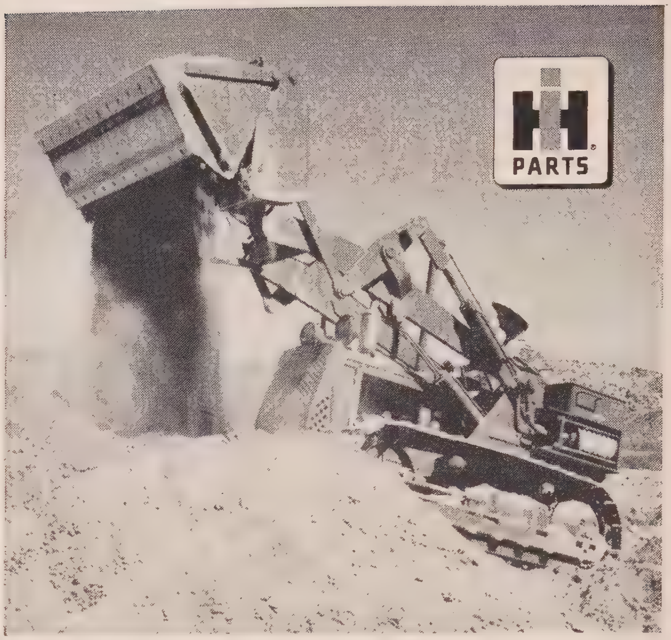
STARR NETS

STARR NETTING . . . STAR PERFORMANCE

A. M. STARR NET CO.
EAST HAMPTON, CONN., U.S.A.



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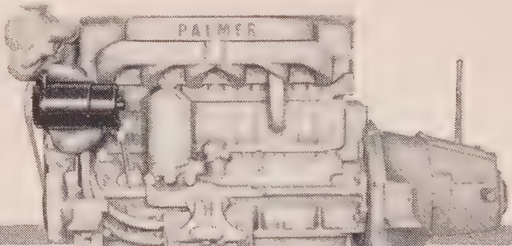

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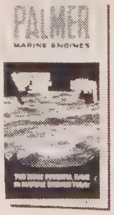

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To carry the great pack of salmon became a serious problem but in the following months the packers reached a firm resolution not to reduce the price. The great amount of fiscal credit required to implement this resolve eventually was provided by various agencies. Further, late in the year the British buyers began to show increased interest in Japanese Red salmon.

Japanese Canned Salmon Pack

(Unit: Full case of 48 lbs. net)

Year	Red	Pink	Chum	Silver	King	Tidbit	TOTAL
1951	...	...	...	...	...	..	195,776
1952	...	...	...	...	...	..	97,700
1953	...	...	...	...	...	..	208,689
1954	186,146	174,069	80,468	65,658	2,474	4,818	513,633
1955	623,542	675,860	282,890	174,208	3,155	24,097	1,783,752
1956	520,111	781,282	494,943	175,001	7,405	32,907	2,011,649
1957	1,061,307	1,112,608	198,777	11,925	999	38,107	2,423,723
1958	607,048	911,812	357,478	154,585	1,697	52,607	2,085,227
1959	518,805	1,307,912	156,634	99,135	4,042	62,697	2,149,225
1960	826,361	481,512	28,298	89,583	15,446	70,945	1,512,145
1961	1,074,950	974,610	1,512	36,439*	...	N. A.	2,087,511

NOTE: Segregation by species not available prior to 1954 but the packs were practically all pink. Packing on board factoryship on high seas began in 1953 but in that year only one factoryship had canning equipment with an output of only 38,427 cases including 21,450 cases of Red, although there was a little more pack of this species, etc., in that year from fish frozen in factoryships and brought to land canneries. Since then this practice is continued year after year. In recent years a great number of land factories, often of a tiny scale, have appeared and are engaged principally in packing of Pink Salmon. In 1961 there were 8 factoryship operating firms and 62 land cannery operation firms. *Includes some King Salmon.

Canned Crab—

- The factoryship *Tokei Maru* again operated in 1961 in the Bering Sea off the north coast of the Alaska Peninsula; and four factoryships worked in the Okhotsk Sea off the west coast of Kamchatka. Thus the basic operation was on the same scale as in 1960. One other vessel, *Shinyo Maru*, took some Bering Sea King crabs and froze them, in addition to her pack of bottomfish.

Suddenly in the month of August, 1961, the Fishery Agency offered permission to the industry to dispatch three 1,500-ton refrigeration motherships to the Bering Sea near Bristol Bay for operation from August until late October with a pack target of 700 tons of crab meat. Under this proposition three freezerships, *Eishin Maru*, No. 31 *Banshu Maru*, and *Chichibu Maru* with 16 catcher boats were dispatched by seven participating firms. The 700-ton quota was filled by late October with fishing and recovery both satisfactory.

Of the 700 tons of crab meat, only a small part was canned; this by one firm which elected to put part of its share into cans in Japan. Most of the pack was sold frozen to European countries other than the United Kingdom for canning in Europe.

The granting of the license for this operation was announced as a specific one, for the autumn of 1961 only; but at the end of that year there appeared to be the probability that two canning factoryships would be licensed for Bering Sea, including the veteran *Tokei Maru*.

Pacific Whaling—

- As in 1960, one whaling mothership for finned whales and another for sperm whales operated in Bering Sea from May until August.

The *Kyokuyo Maru* fleet, which had been assigned a mission to develop a whaling ground east of 180°, was able to kill a large number, in her last stage being in the vicinity of Kodiak Island. Under special permission, three balaenas were killed and thoroughly examined scientifically at the close of the operation near Kodiak Island.

In quest of sperms, the *Kinyo Maru* fleet encountered severe competition

Japanese High Seas Salmon Catch

(By area, in numbers of vessels and number of fish.)

YEAR	Operation Area	Mother-ship	Catcher* Boats	RED	PINK	CHUM	SILVER	KING	TOTAL	AVERAGE Catch per Catcher Boat
1952	Aleutian	3	57	744,929	703,402	644,453	24,446	1,379	2,118,609	37,168
1953	Aleutian	3	105	1,579,850	3,065,336	2,707,134	339,603	8,253	7,700,176	73,350
1954	Aleutian	7	205	3,816,301	5,804,010	9,403,818	1,398,258	74,224	20,496,611	99,983
1955	Aleutian	12	347	12,163,948	16,507,827	18,573,457	3,183,813	74,084	50,503,129	145,542
	Okhotsk	2	60	329,883	9,408,875	3,404,134	392,096	2,398	13,537,396	225,623
	Total	14	407	12,493,831	25,916,702	21,977,591	3,575,909	76,482	64,040,515	157,347
1956	Aleutian	14	447	9,633,546	12,006,578	17,166,916	3,757,456	136,520	42,701,016	95,528
	Okhotsk	2	59	656,404	5,366,361	3,223,943	117,332	994	9,365,034	158,729
	Total	16	506	10,289,950	17,372,939	20,390,859	3,874,788	137,514	52,066,050	102,897
1957	Aleutian	14	405	19,822,540	21,045,585	9,246,132	339,623	31,103	50,484,983	124,654
	Okhotsk	2	56	274,055	6,834,800	2,661,826	102,107	589	9,873,377	176,310
	Total	16	461	20,096,595	27,880,385	11,907,958	441,730	31,672	60,358,360	130,929
1958	Aleutian Okhotsk	15 1	432 28	12,025,000	15,546,000	18,786,000	3,393,000	45,000	49,798,000	108,256
1959	Aleutian	16	460	9,125,000	18,856,000	12,859,000	1,423,000	68,000	42,331,000	92,024
1960	Aleutian	12	410	12,879,000	1,885,000	10,518,000	962,000	180,000	26,424,000	64,449
1961	Aleutian	12	410	Quota and catch, all species, 53,600 metric tons.						130.7 tons

NOTE: A small number of "investigation ships" is included in each year up to 1956. The table does not include the salmon catch made on the high seas by Japan home-based gillnet and longline vessels. The catch by operations area was not published by the Fishery Agency for 1958, and the combined totals were in round numbers of fish. Operation in the Okhotsk Sea was discontinued in 1959. Of the total catch of 65,000 metric tons agreed upon for 1961 operations within the Soviet-Japanese fisheries treaty zone, 53,600 tons were allocated to the mothership-system gillnet operation and 11,400 tons to the home-based vessels. In addition to these vessels, a number of smaller gillnet boats fished Pink salmon in the Japan Sea. Further coastwise fisheries are operated in Hokkaido and Northern Honshu. Thus in 1961 the grand total catch of salmon by the Japanese turned out to be 145,633 tons, consisting of 36,738 tons of Red, 75,022 tons of Pink, 29,111 tons of Chum, 4,286 tons of Silver and 506 tons of King salmon, as against the total catch by the Soviet in the Far East of 79,738 tons as officially reported at Moscow late in the year.

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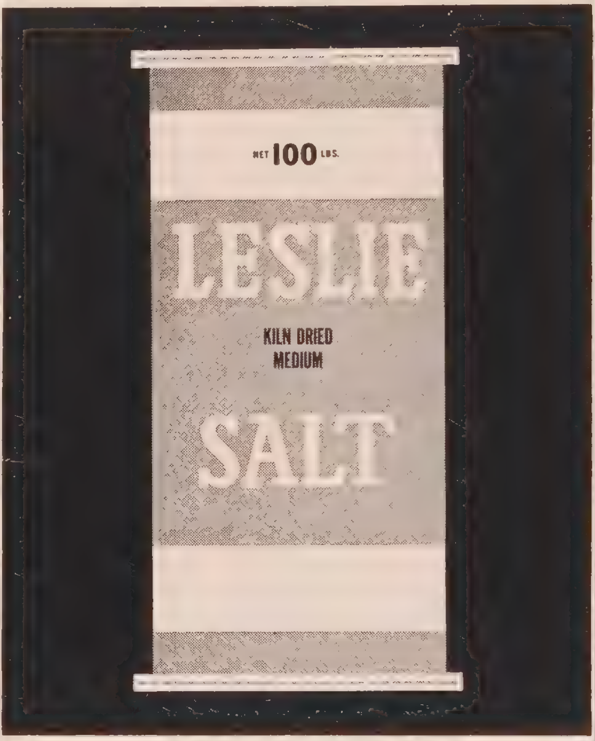

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Japanese Mothership-Type Bottomfish Operations in Bering Sea

(Unit for Catch and Products, Metric Ton)

Kind of Mothership	Year	Factoryship	Catcher	Catch	Products			
					Fishmeal	Fish Soluble	Fish-Oil	Frozen Fish
Fishmeal Factoryship by Trawling	1960	5	127	417,682	57,536	10,455	5,345	27,674
	1961	5	135	---	---	---	---	---
Refrigeration Factoryship by Trawling	1960	4	33	25,682	228	---	---	16,801
	1961	5	38	---	---	---	---	---
Refrigeration Factoryship by Longline & Gillnets	1960	4	30	14,025	Catches of this type of motherships were all frozen except a small tonnage which had to be salted.			
	1961	23	210	---				

NOTE: The mentioned classification of fishing gears used is a rough one. Source, Fishery Agency for 1960. In both 1960 and 1961, one refrigeration factoryship froze some King Crab, and in 1961, another factoryship packed canned shrimp as the main purpose.

from Soviet Russian whalers everywhere throughout the season.

In the autumn of 1961 an agreement was concluded between Taiyo Gyogyo K.K., and British Columbia Packers, Ltd., whereby the Japanese company will provide two whale catchers and certain technical experts for the operation of the B. C. Packers' shore station on Vancouver Island. A significant part of the undertaking is concerned with careful protection of the quality of much of the whale meat, which subsequently will be frozen and shipped to Japan for food.

Bering Bottomfish—

● In 1961 a new term entered the lexicon of Japan's industrial fisheries, when "Bering Sea bottomfish fisheries" came into use.

Traders have a clear memory that for a short time about 30 years before there was some export of frozen halibut from fish caught off Nemuro and Hokkaido.

Then a few years ago a leading fishing company tried longline and bottom gillnet fishing for cod, rockfish and halibut, fishing boats working with a refrigerated mothership off the Siberian coastline between Cape Olyutorski and Cape Navarin. The venture proved highly successful, particularly in 1960. This induced other companies to enter the field, encouraged by the fact that licenses for longline and gillnet fishing could be obtained readily from the Japan Fishery Agency. Herring of fine quality was caught with gillnet.

At about the same time the presence of shrimp fishing grounds had been confirmed in eastern Bering Sea.

With these disclosures of new resources in the Bering, the Fishery Agency early in 1961 proclaimed a code of operational regulations to cover all Bering Sea fisheries working on a mothership system, and applicable to formerly established enterprises as well as new ventures.

Among the provisions of the code was that any salmon or halibut caught in waters east of 175° West Longitude should be returned to the sea, as had previously been the rule. All fishable waters of Bering Sea were divided into six areas, A through F, in order that mothership operations could be restricted only to certain areas.

In 1961 for a long period from early spring until autumn a total of 33 motherships were in operation. These were in addition to the substantial fleet of Soviet trawlers competing with them, so 1961 saw the greatest activity in Bering Sea history.

Of the 33 Japanese mothership operations, 10 were ventures begun in earlier years, while all others were newcomers. Ten of the mothership units were supplied only by trawling. Eight used trawls, longlines and gillnets in combination; while the remaining 15 depended solely on longlines and gillnets.

Five of the factoryships were concerned primarily with fish reduction, fish meal being the principal product. This group included the *Tenyo Maru,* which is classed as a "fish oil and fish meal factoryship" because she derives her material largely from herring and other fat fish, which gives fish oil a substantially greater product importance than is the case in the vessels concerned primarily with bottomfish as raw material.

The other motherships, with one exception, were equipped primarily for freezing. The exception mentioned was the *Eijin Maru* of Taiyo Gyogyo K.K., which was designed as the world's first high seas shrimp cannery. Her principal product was about 74,000 cases of canned shrimp, which later was sold in the United States, Canada and the United Kingdom. In all these markets it was well received and earned favorable buyer response.

In addition to the 33 motherships counted, there were two newly-built stern trawlers which cruised extensively over Bering Sea and found much shrimp of the type which Taiyo's *Eijin Maru* was canning. Shrimp taken by these stern trawlers were

Taiyo's Mixed Feed Plant at Yokohama is an example of diversification among Japan's great fishing companies. This great plant utilizes fish meal and solubles from Taiyo's own operations, mixing them with grains and dried grass handled by pneumatic conveyors. Control machinery is largely of West German manufacture.

Japanese Canned Crab Pack

(In cases of 48 6-1/2 oz. cans)

YEAR	KING CRAB			OTHER CRABS				TOTAL	No. of Factory-ship	YEAR
	Ocean	Land	Total	Zuwai	Kegani	Hanasaki	Total			
1953	58,240	140,178	198,418	3,966	44,386	5,462	53,814	252,232	1	1953
1954	59,850	85,063	144,913	7,327	286,141	11,520	304,988	449,901	1	1954
1955	206,089	181,557	387,646	4,840	362,270	12,838	379,948	767,594	3	1955
1956	427,350	133,558	560,908	20,000	304,064	25,054	349,118	910,026	6	1956
1957	404,250	98,773	503,023	25,000	258,481	11,933	295,414	798,437	5	1957
1958	379,850	165,915	545,765	45,000	144,263	16,947	206,210	751,975	5	1958
1959	350,000	176,559	526,559	45,000	140,892	12,977	198,869	725,428	5	1959
1960	340,000	158,010	498,010	46,000	205,855	9,460	261,315	759,325	5	1960
1961	340,000	130,000	470,000	30,000	185,000	6,500	221,500	691,500	5	1961

NOTE: Packs of 1961 include estimate reported by Japan Export Canned Crab Manufacturers Association. In 1961 there were in all 66 members of the association but actually about 50 firms including 4 factoryship operating companies have made more or less shipments.

Aleutian Area Whaling by Japanese

YEAR	Factory-ship	Catcher Boat	WHALES CAUGHT						PRODUCTS (Unit, metric ton)		
			Blue	Fin	Humpback	Sei	Sperm	Total	Meat, Skin	Fin, Whale Oil	Sperm Whale Oil
1952	1	4	55	213	37	14	...	319	4,054	2,313	..
1953	1	4	90	470	42	98	...	700	7,320	4,951	...
1954	2	10	145	1,316	136	129	490	2,216	15,389	13,847	4,060
1955	2	14	70	1,360	117	21	1,084	2,652	13,269	10,882	8,144
1956	2	15	70	1,415	37	48	1,598	3,168	17,038	12,343	12,579
1957	2	17	70	1,405	...	166	1,700	3,341	19,469	12,305	12,995
1958	2	15	70	1,331	24	330	1,500	3,255	21,593	11,901	12,823
1959	2	15	70	1,450	...	32	1,800	3,352	23,083	12,821	14,417
1960	2	15	70	1,393	...	203	1,800	3,466	27,241	10,725	14,865
1961	2	15	70	1,452	9	4	1,800	3,335	24,938	12,630	13,050

NOTE: Source, Fishery Agency

Japanese Mid-Pacific Mothership Tuna Operations

YEAR	Factory-ship	Catcher Boat	CATCHES (Unit, metric tons)						TOTAL
			Yellowfin	Albacore	Bigeye	Bluefin	Skipjack	Others	
1950	3	44	4,140	49	581	1	12	2,416	7,199
1951	6	88	5,473	138	2,702	2	19	4,069	12,403
1952	2	38	4,468	79	598	7	30	2,067	7,249
1953	2	37	4,830	323	831	7	12	3,031	9,034
1954	6	122	4,317	3,950	1,332	687	16	5,387	15,689
1955	3	103	2,921	4,705	767	6	28	4,933	13,361
1956	3	94	2,021	3,689	1,495	5	14	3,954	11,180
1957	3	96	5,153	3,125	1,854	5	42	3,923	14,105
1958	3	88	4,656	4,096	1,910	4	41	3,674	14,384
1959	4	162	2,920	5,554	1,364	6,595	77	4,178	20,688
1960	5	215	8,587	7,971	4,709	594	60	5,079	24,002
1961	5	240	---	---	---	---	--	---	26,400*

NOTE: Source, Fishery Agency. "Others" include Broad-bill swordfish, Black marlin, White marlin, Striped marlin, Sailfish, Sharks, etc. *Estimated. Actual fishing area covers widely around Fiji Islands.

Japanese Atlantic Tuna Operations

Year	Fishing Unit	No. of Trips	Catches (Unit, Metric Ton)							
			Yellowfin	Albacore	Bigeye	Bluefin	Skipjack	Marlins	Others	TOTAL
1958	51	131	27,159	1,992	453	34	0	1,087	254	30,979
1959	62	189	44,071	3,614	1,478	256	0	1,082	328	50,829
1960	88	243	57,756	8,516	2,801	684	1	2,161	1,024	72,946

NOTE: Source, Fishery Agency. "Marlins" include Atlantic Blue Marlin, White Marlin, Broadbill Swordfish and Sailfish. Landed countries range in Central and South America, Africa and Europe.

Japanese Foreign-Based Tuna Operations

Unit of Catch, Metric Ton

Year	Samoa	New Hebrides	Indian Ocean	TOTAL
1955	8,049	---	---	8,049
1956	7,094	---	---	7,094
1957	8,666	150	---	8,816
1958	11,540	4,309	---	15,849
1959	12,054	3,889	686	16,629
1960	10,883	4,026	1,503	16,412

NOTE: Source, Fishery Agency.

Daybreak on Bering Sea—Here is Nichiro Gyogyo's integrated stern-trawler **Akebono Maru No. 51** — named for Nichiro's famous **Daybreak** label — which pioneered Japan's winter trawl fishery on Bering Sea in December, 1961. Completed in July, 1961, she is 252′ in length and can freeze 50 metric tons of fish daily.

frozen and eventually delivered to Nichiro's great shellfish plant at Hiroshima to be canned for export.

The full Bering Sea fleet of 1961 included, in addition to the motherships, some 380 fishing vessels engaged in supplying the factoryships. The total catch, as reported by the Fishery Agency, was:

Species	*Metric Tons*
Flounder	396,628
"Oily Flounder"	57,335
Halibut	11,005*
Cod	6,764*
Pollock	24,404*
Sablefish	26,231*
Rockfish	10,543*
Shrimp	10,225
Herring	72,260
Others	5,719
TOTAL	621,114

*Catch fell short of target.

In the case of halibut, the actual catch was only about one-fourth of that which had formerly been reported as the planned target. It is also to be noted that the catches of other high-priced species for freezing generally fell short of the projected tonnage.

On the other hand, the herring catch was almost double the planned target, which produced a drastic decline in the domestic market price late in the summer. Much of this herring eventually was disposed of profitably to Czechoslovakia, but on the whole the new ventures based on longline and gillnet fishing only proved economic failures. This was influenced in large part, it appears, by the extraordinary concentration of vessels off Cape Olyutorski.

At year-end of 1961 it appeared that the 1962 operations will see the fleet curtailed to some degree by voluntary measures within the industry.

The development of this industry in 1961 saw the emergence of "Bering Sea Bottom Fishery" as an industrial term and concept, supplanting the former characterization of operations there as trawling only.

World Tuna Operations—

- Japan's tuna production during the years around 1950 was divided almost equally between fish produced by live-bait pole and line fishing on the one hand and longline fishing on the other. In earlier years the percentage of the catch made by the longline method had been even less.

Now in recent years the catch taken by longline is two to three times as great as that made by pole-and-line.

The total catch, which had stood at about 150,000 metric tons annually for the years around 1950, now has risen above 500,000 tons. Thus longlining now constitutes the mainstay of Japanese tuna production, but the remarkable efficiency of the newly developed purse seiners and seining methods in the United States has come to surprise and interest the Japanese tuna fishing industry.

An expert researcher of the Albacore fisheries late in 1961 suggested that the Fishery Agency should construct experimental equipment of the type successful in the United States for trial in the waters adjacent to Japan. It is true that a number of older type purse seiners and stationary pound nets are employed in Japanese coastal waters in tuna fishing, and that seasonally they make a substantial contribution to the catch of some species of tuna.

- Atlantic Ocean operations of Japanese tuna boats having become firmly established, the use of foreign ports by these vessels for transshipping their catches to their eventual destinations steadily increased during 1961.

In 1960 Port of Spain, Trinidad, and Cristobal, Panama, each saw about 30 deliveries by Japanese tuna vessels.

In 1961 a tuna base with cold storage facilities and other equipment was being constructed at Curacao, NWI, by Nippon Reizo K.K. The facilities provided at Curacao are believed to surpass those of any other Caribbean port for transshipment of tuna.

On the African coast the Japanese tuna vessels in 1961 were able to make use of facilities at Dakar, Freetown and Las Palmas. Although these ports have been of great value in maintaining the Atlantic operation, the industry feels in need of one or more well-equipped additional bases for freezing, storing, sorting and transshipping tuna. With this necessity in mind, the industry submitted strong representations to the appropriate ministries in the Japanese government in the fall of 1961.

- Apart from such intermediate bases and transshipping facilities, Japan's tuna fishing fleet currently engages in the so-called "overseas tuna operations." This form of commercial activity extends to many parts of the world and involves enterprises based on various forms of contracts with local interests. These may involve sales of their catches by Japanese fishing vessels, participation in joint-venture companies, granting of long-term fishing rights, etc.

Notable instances of this sort are found at American Samoa and Santo, New Hebrides, in the Pacific; at Penang, Malaya, and at Ceylon. In the Atlantic instances are observed at Recife, Brazil; at Cumana, Venezuela; and at Mar del Plata, Argentine.

Into the Gulf of Alaska this spring will move **Chichibu Maru,** new 5,500-ton factoryship of the Nichiro Gyogyo fleet. Completed only in December, 1961, her first assignment was to serve a fleet of six trawlers in Bering Sea through the winter, moving south of the Alaska Peninsula in the spring. She can freeze 150 tons of fish a day, reducing waste and unmarketable varieties to oil and meal.

A plan for the development of an enterprise around the Fiji Islands was broached late in 1961. It will provide occupation for a large number of relatively small fishing craft from Japan, and is expected to become fully active in 1962.

Mid-Pacific tuna mothership operation was extended somewhat in 1961 when the Fishery Agency granted a small extension of fishing area; and then later sanctioned a new tuna producing system called "portable vessel-type tuna mothership." This involved the employment of large long-range tuna longliners which carry several fishing barges with them to extend the fishing effort which can be mounted once the producing area has been reached.

- Fishing for tuna in Japan home waters was quite variable in 1961. Summer Albacore abundance did not develop as expected. Skipjack, contrary to the miserable experience of 1960 turned out to be a true bonanza for the fishermen. Due to a strong warm current the fishing lasted until late in the autumn off the mid and north coast of Honshu. The total Japan home fishery Skipjack catch for 1961 was about 2.5 times as great as the year before.

Atlantic Ocean tuna fishing in 1961 saw a marked decline in the rate of catch of Yellowfin, and a corresponding gain in Big-Eye during the spring and summer months. Later in the year, the usual rich winter fishing for Albacore did not develop as anticipated.

Overseas Developments—

- Remarkable development along several lines was noted in Japan's fisheries in overseas areas in 1961.

The converted reduction factoryship *Renshin Maru,* 14,094 gross tons, of the Hokuyo Suisan K.K., which operated most successfully on Bering Sea bottomfish in 1960 and 1961, late in the latter year shifted to Luanda, Angola, under a fisheries development agreement with Angolan interests.

Renshin Maru was scheduled to produce 7,200 tons of fish meal, plus much fish oil, fish solubles and frozen fish, from material provided by 53 Angolan fishing vessels. The period of the commitment is for six months from Dec. 1, 1961, which will permit the *Renshin Maru* to return to Bering Sea, if that proves attractive.

In October, 1961, an international enterprise under technical assistance and sales guidance of Japanese firms was initiated in Guatemala. It will be concerned with the development of shrimp fishing grounds off the coast of that Central American country, and was initiated with a gala celebration at Champerico.

Fishing Developments—

- Large trawlers capable of operating in the farthest waters from Japan increased in number during 1961 from 14 to 24.

Japan's largest trawler, *Ibuki Maru,* 2,500 tons, the pride of Nippon Suisan K.K., was completed and left Tobata for the Canary Islands late in the year.

A memorable feature of 1961 was the undertaking of wintertime operations in Bering Sea by trawlers of Nichiro Gyogyo K.K., followed by an expedition mounted by Taiyo Gyogyo K.K. Nichiro's two giant *Akebono Maru* trawlers resume operations late in the year in the same waters where they had worked during the preceding summer, fishing for cod, sablefish and rosefish.

They were met with the news from Moscow that this winter the Bering Sea will be swarming with the largest number of trawlers ever to work those waters as the USSR winter fleet will be substantially increased.

- In recent years keen competition has arisen among trawlers, particularly those working shrimp, in the wintertime fishery in the East China Sea, with an apparent downward trend in resource abundance. This condition produced intense concentration on increasing efficiency, with improved fishing gear and instrumentation being added in a steady race of technologies.

This produced a new method of mid-winter trawling based on instruments which give the fishermen precise information as to where their nets actually are fishing, and the ability to put them at the productive horizons indicated by their sounders.

The various Japanese manufacturers have produced gear of this sort, each with its own advantages and own name. For example, Furuno Denki K.K. calls its equipment "Net Sonde";

while Kaijo Denki K.K. uses the term "Netgraph" for its instrument; and K.K. Sanken's equipment is called "Net Vision."

Demand for this equipment is said to have exceeded manufacturing capacity at times, the East China Sea trawlers having shipped the instruments so actively late in 1961 in preparation for the winter shrimp season.

Mid-water trawling is also understood to be under test in Bering Sea by a national technological laboratory, supplemented by the experimental and exploratory facilities of fishing companies.

Diversification—

- In Japan the activities of large fishing companies in diversifying their businesses progressed amazingly in 1961, and gives certain promise of even further advance in 1962. These companies have moved into such diverse lines as poultry raising, mink culture, mayonnaise manufacture, and the production of frozen foods of non-fish origin.

Fish sausage continues to enjoy increasing popularity in Japan, with the consumer enthusiasm for it apparently knowing no limit.

All of the leading fishing companies in 1961 were producing instant "lanen," Chinese-type noodles widely popular in Japan, and now made available in a quick-cooking convenience form. The companies move steadily into other food fields where they can capitalize upon the public acceptance of their famous brands; and where perhaps it is possible to recover higher economic return from their traditional raw material through the use of by-products in poultry raising or fur animal culture.

Promise of growth and increased economic return from a long-established Japanese fishery product centers on saury, a familiar fish in Japan, and now coming into wider acceptance in other countries. The abundance of saury is subject to wide variation from year to year and this uncertainty of supply reacts to some extent upon its growth possibilities. In 1960 the supply was very disappointing; and during the summer months of 1961 there was but little fishing, the schools of saury tending to remain in far northern waters, presumably as result of the warm surface waters along the Pacific Coast of the main island of Honshu.

Then in November the warm waters were replaced and the fish moved to the traditional fishing grounds, late, but in astonishing abundance. The landed price fell sharply, but a great pack of canned saury was made in the closing two months of 1961.

Japanese Fisheries Directory

- Japanese fishery agencies and associations, their addresses and principal officers as of January 1, 1962, were:

General

Fishery Agency, Ministry of Agriculture and Forestry, Kasumigaseki, Chiyoda-ku, Tokyo — Minister, Ichiro Kono; Director, Masayoshi Ito.

Japan Fishery Society, Sankaido, Akasaka Tameike, Minato-ku, Tokyo —President, Tatsunosuke Takasaki.

Vessel Owners

Federation of Japan Tuna and Bonito Fisheries Cooperative Associations, Tuna Building, 2-7 Hirakawa-cho, Chiyoda-ku, Tokyo — President, Bunpei Hamaji.

Operators

Japan Canners Association, 567 Marunouchi Building, Marunouchi, Chiyoda-ku, Tokyo—President, Tomohachi Ueta.

Japan Canned Food Exporters Association, Naigai Building, Marunouchi, Chiyoda-ku, Tokyo—Director-in-Chief, Takeshi Aizawa.

Japan Frozen Food Exporters Association, Kohan Building, 3-3 Kasumigaseki, Minato-ku, Tokyo — Director-in-Chief, Kenkichi Nakabe.

Japan Export Frozen Tuna Manufacturers Association, Tuna Building, 2-7 Hirakawa-cho, Chiyoda-ku, Tokyo—Director-in-Chief, Kenkichi Nakabe.

Japan Export Canned Tuna Manufacturers Association, Kokubu Building, 1-2 Nihonbashi-dori, Chuo-ku, Tokyo — Director-in-Chief, Tomohachi Ueta.

Japan Export Canned Salmon Manufacturers Association, 2-4 Ote-machi, Chiyoda-ku, Tokyo — Director-in-Chief, Koichiro Kobayashi.

Japan Export Land-pack Canned Salmon Manufacturers Association, Kanyu Kaikan, 7-25 Ironai-cho, Otaru, Hokkaido — Director-in-Chief, Katsusaburo Usui.

Japan Export Canned Crab Manufacturers Association, 2 Kanda Mitoshiro-cho, Chiyoda-ku, Tokvo — Director-in-Chief, Kyuhei Suzuki.

Japan Export Canned Sardines Manufacturers Association, Naigai Building, Marunouchi, Chiyoda-ku, Tokyo — Director-in-Chief, Benichi Tamura.

Japan Export Canned Saury Manufacturers Association, Naigai Building, Marunouchi, Chiyoda-ku, Tokyo — Director-in-Chief, Wasaburo Nemoto.

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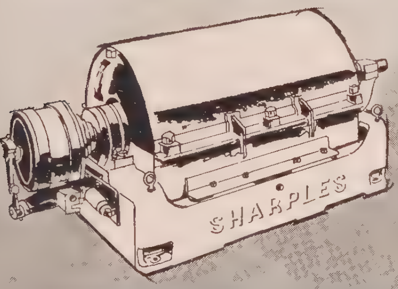

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SHARPLES

AUSTRALIA

Problems A-Plenty

By R. M. FOWLER

- There have been several important developments in the Australian tuna fishing industry during the past year.

1. The Fish Canners Association appealed to the Federal Government for tariff protection against the cheap imports of canned tuna, particularly from Japan and Peru. This appeal was investigated by the Australian Tariff Board and at their recommendation the Government increased the duty on all imported canned tuna to 9d per lb. In addition to this duty, imported canned fish is subject to sales tax of 12½%, whereas Australian canned fish is exempt from sales tax.

2. The fish canning business of Green's Products Limited was bought over by Kraft Foods Limited, who in turn are owned by National Dairy Products Co. of U.S.A. Green's owned fish canneries at Eden and Narooma on the New South Wales Coast and it was reported that the purchase price was £612,000 Australian currency. This take-over would suggest that tuna is now getting in to the big business category in Australia. At the time of the purchase, Green's fish canning business would be the largest of its kind in Australia.

3. A large American tuna clipper was brought to Australia by Cliff Gibson, who had already established himself as a successful tuna fisherman on the smaller class of boat. This vessel over a trial period should at least prove whether the Australian tuna fishery is suitable for the operation of the large type of clipper.

4. During 1960-61, a record Australian tuna catch of approximately 5,000 tons was made. This was caught on the New South Wales coast and the South Australian coast in a period of approximately eight months, and during the other four months the tuna fleet was virtually unemployed.

5. The Federal Government chartered one of Australia's most successful tuna clippers, complete with skipper and crew, to make a 12-month survey for tuna on the West Australian coast. Up to the date of writing, this vessel has not produced any tuna, but it is anticipated that the tuna off the coast of Western Australia will be seasonal, as in other parts of Australia, therefore it will probably take the full 12 months before any conclusions can be drawn.

6. The Australian market for canned tuna has built up considerably over the past 12 months and virtually all stocks of Australian canned tuna have been exhausted for the past two months. The result is that any tuna being caught in New South Wales can be sold as soon as it is canned. One of the main reasons for this tremendous rise in the demand for canned tuna in Australia is the introduction of a 15 oz. can, which is selling extremely well and of course uses a large tonnage of tuna to get any quantity of cans in this size.

- The overall picture for the Australian tuna industry is bright, but there are one or two problems to be overcome before the industry can really grow to a large extent.

The biggest of these problems is to increase the shore handling facilities in the way of canning and freezing to allow the fishermen to catch all the tuna possible during their very short season. In South Australia this difficulty has, to a great extent, been overcome by the State Government improving their freezing facilities in Port Lincoln, and up to the present SAFCOL has been able to handle all the fish that could be caught and it is anticipated that this will also be the position during the 1962 season.

However, the opposite is the position in New South Wales where, even although this has so far been a very poor season, already the fishermen have been stopped fishing at one period, and the boats are on a daily quota so that once again if the fish run heavy in December the fishermen will not be able to sell their fish.

This seems, on the surface, to be a ridiculous position in view of the world demand for tuna. However, it is not a problem that can easily be solved, as the cost of providing either a large canning line or freezing to handle the peak of the catch is probably uneconomic in view of the very short period that this equipment would be used each year. It would, of course, be a better economic proposition to transport the fish to either Sydney or Melbourne, but unfortunately there are no large freezers available in either of these cities to handle fish. South Australia has freezing facilities available, but it is very difficult at short notice to move large quantities of fresh fish some 1,200 miles, particularly when the first 100 miles of road out of Eden are very bad.

Therefore, the position remains in New South Wales where during the height of the season the fishermen are unable to sell all the fish they can catch. Possibly this position will hasten the advent of the larger clipper which can fill up and carry its catch to some point where it can all be sold.

- Up to the present time, the large clipper brought from America by Mr. Gibson and called *Favorite*, has not been operating long enough to tell whether this type of vessel will be successful. A lot depends on whether this vessel can sell all its catch in the home port. It obviously has the advantage that when the local cannery

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NOTE — Mr. Fowler is a widely known authority on Australia's fishing industry and is general manager of the canning division of the South Australian Fishermen's Cooperative, Ltd.

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cannot take fish in glut periods that the *Favorite* can continue fishing and freeze its own catch. However, there is a limit to this and if the vessel is full before the cannery can take fish, then it will obviously have to transport the fish to some other point. This means several valuable fishing days lost, and in a very short season this could be a vital economic factor.

This brings up the point of the economics of tuna fishing in Australia, and it is believed that Australian tuna fishermen are paid less per lb. of tuna than any other tuna fishermen in the world. Of course the Australian tuna fisherman does not have far to travel for his catch, as normally he will be working within 100 miles of the nearest tuna port. However, even allowing for this, a payment of approximately 6¢ per lb. does not appear to be enough. It is true by Australian living standards the top tuna fishermen are making a good living, but this is only the few at the top, and the average tuna fisherman is not making enough to attract the right people into the industry.

Also, the tuna fishermen generally are not making enough money to contemplate new and larger boats, therefore the expansion of the industry is being slowed down in this way.

● The main difficulties in paying more for the fish are the lack of continuity in supplies of fish to the canneries, making an expensive stop-start operation, and the fact that the canneries are only operating six to nine months in each year. If this can be answered by bigger vessels catching over a longer period, then the overheads in the canneries can be reduced, but in order to get these larger vessels, the fishermen must be made more prosperous, therefore a way must be found for the canneries to pay more for their fish.

The cost of cans, oil, etc., is approximately double that of American costs, and the distribution costs are very much higher than in America. For instance, on the average the canneries are only receiving approximately two-thirds of what the public is paying in the retail store for each can of tuna. Even with these high costs, certain sizes of cans are selling too cheaply to the public and should be increased to allow that little extra payment to the fishermen to allow the industry to grow.

The position on marketing at the time of writing (early December), is rather absurd in that it would pay better to export all the fish in the frozen form to the U.S.A., rather than can it in Australia for sale on this market.

It is obvious from the above that there are quite a few difficulties to be overcome to allow the tuna industry to expand, but all the people engaged in the industry are very optimistic that these difficulties can be overcome and that tuna fishing in the future in Australia will become really big business.

● The table below shows the growth of the tuna industry, as compared with the practically static position of the production of all other types of fish in Australia. The table also shows how increasingly important tuna production is to Australian fisheries, as the percentage has risen from nothing to almost 10% in ten years, and with the record catch in 1960-61 is becoming still more important.

TABLE 1.

Australian Tuna Production and Total Fish Production 1950/51 to 1959/60 (Live Weight)

Year	Tuna Catch ('000 lb)	Total Fish ('000 lb)(a)	Tuna as % of Total Fish
1950/1951	307	71,339	0.04
1951/1952	259	71,635	0.04
1952/1953	676	81,382	0.08
1953/1954	1,130	78,830	0.14
1954/1955	998	70,417	0.14
1955/1956	1,142	63,299	1.80
1956/1957	2,261	75,403	3.0
1957/1958	3,231	72,016	4.49
1958/1959	5,494	74,416	7.38
1959/1960	7,099	77,806	9.12

(a) Excludes Crustaceans and Molluscs

Source: Fisheries Newsletter—September 1961.

It is interesting to note that Australia imports more than 50% of the table fish used in this country. It would appear that, although Australia is very rich in pelagic fish, such as tuna, that we do not have large trawling grounds for the production of table fish, and therefore we are forced to import the bulk of our supplies. These come mainly from South Africa, United Kingdom, New Zealand and Denmark.

A lot of the supplies of Australian prime fish are still caught by hand on a hook and line, and of course the small quantities caught per man means that these fish must be expensive or the fishermen would not make a living.

Another point mitigating against Australia's ground fish is that the bulk of what is caught are, by world standards, small fish and therefore very expensive to fillet and process, which makes it very difficult for any Australian fishing company to compete with the overseas imports, with the result that the bulk of the table fish caught in Australia is sold as fresh fish, and it would appear that there is no way round this unless the Australian public will pay more

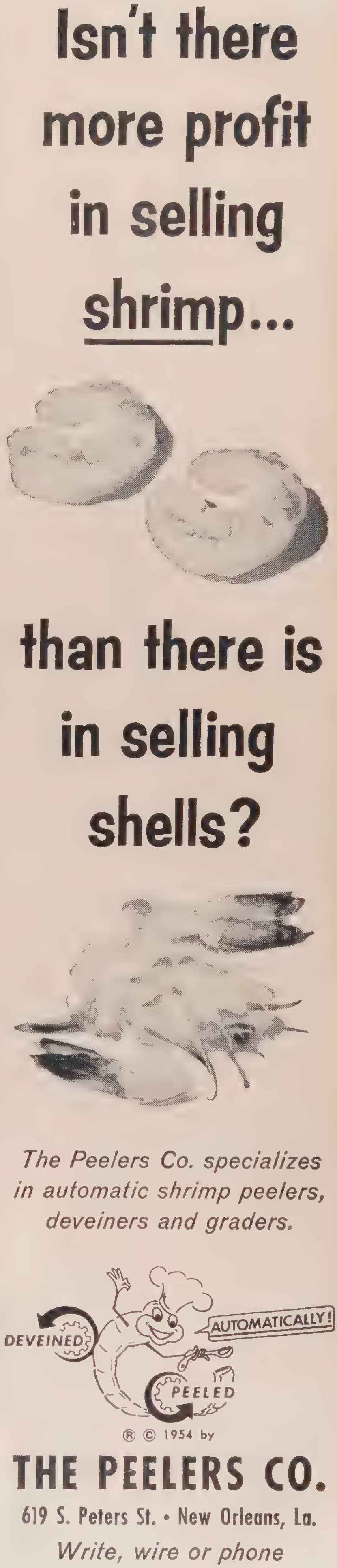
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TABLE 2.

FISH AND FISH PRODUCTS—EDIBLE WEIGHT (MILLION LB)

Year	Imports		Production(a)	
	Fresh/Frozen	Other	Fish	Crustaceans
1950/51	11.6	31.1	35.2	4.3
1951/52	16.9	30.4	39.5	5.6
1952/53	9.7	12.8	44.7	6.5
1953/54	15.8	22.5	42.8	7.4
1954/55	18.5	28.4	37.0	9.1
1955/56	19.3	33.1	35.1	8.5
1956/57	18.8	21.6	40.5	8.3
1957/58	23.2	29.2	39.5	9.1
1958/59	24.6	24.6	40.8	11.3
1959/60(b)	35.5	31.7	42.3	12.2

(a) Excludes molluscs (b) Preliminary figures

Source: Fisheries Newsletter—May 1961.

for processed and packaged Australian fish.

The industry producing ground fish has, of course, no protection against cheap imports as the duty on frozen fish coming into Australia is only one penny per lb., which in no way at all compensates for the very big difference in cost of producing fish in Australia as compared with South Africa, United Kingdom or Denmark.

Table 2 shows imports of fish compared with local production over the years 1959-60, the last year for which complete statistics are available.

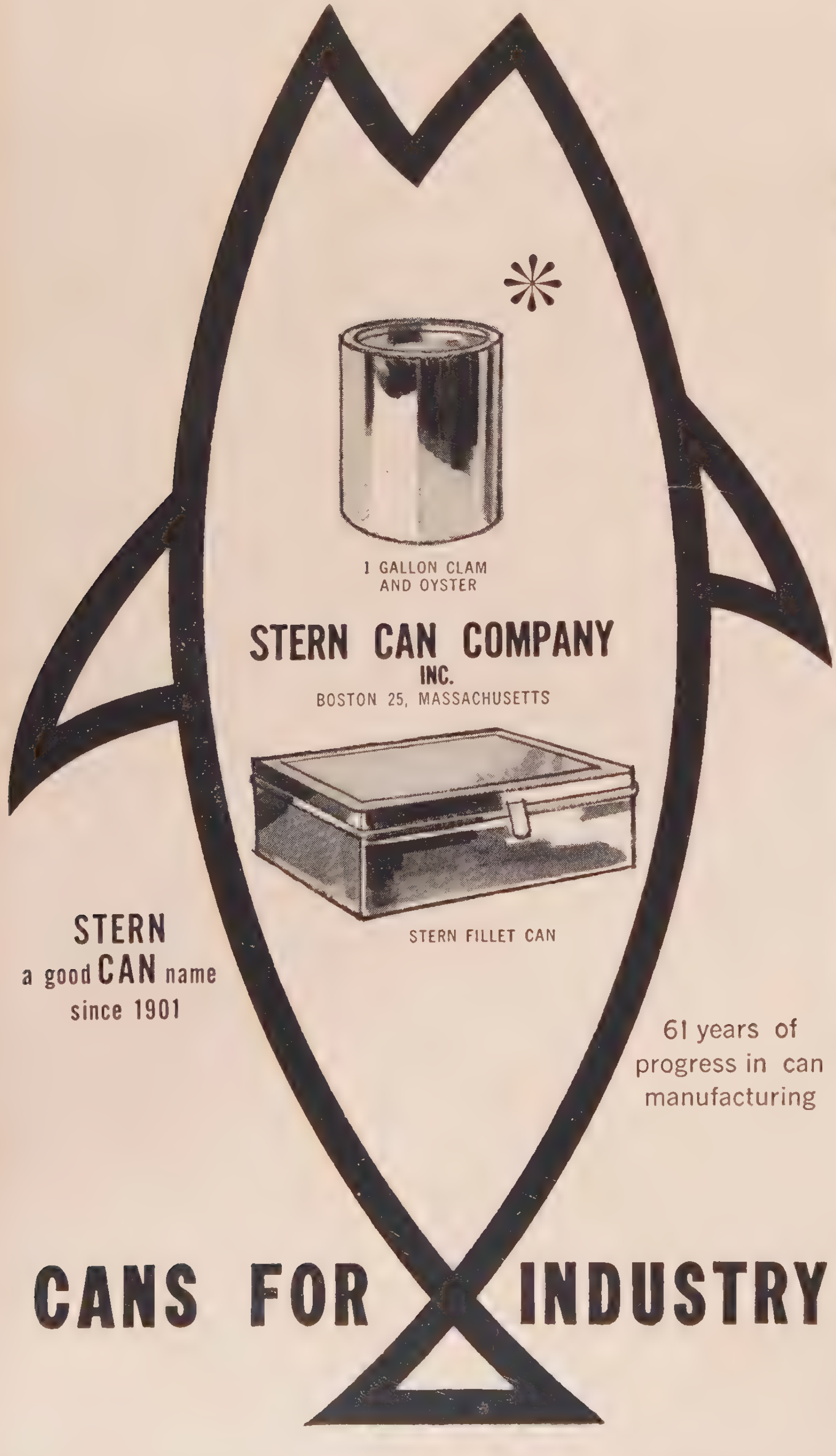
- Some 18 months ago, the Federal Government purchased a 160′ trawler in England to explore the possibilities of trawling in the Great Australian Bight. This vessel of course encountered many difficulties, both in fishing and marketing. However, she was catching fish at the rate of three tons per day spent on the fishing grounds. The company owning the trawler, and financed by the Government, has lost considerable sums of money and the trawler is now tied up and is being offered for sale by tender.

Initially the fish was marketed in the fresh round form on the Adelaide, Sydney and Melbourne markets, but the cost of transport in refrigerated vehicles from Adelaide to Sydney (where the bulk of the fish was sold) proved too costly. For the past two months the fish have been filleted and frozen in Adelaide, and the frozen fillets have been very well received by the trade. However, the cost of shore operations, supported by only one trawler, appear to be too costly.

The main species of fish caught by this trawler were Red Snapper (*Trachichtnodes gerardi*), Morwong (*Nemadactylus Macropterus*) and Flathead (*Neoplatycephalus Speculator*), all of which are acceptable on the Australian market.

- Although the volume of Australian crayfish exports fell slightly in 1960/61 as compared with 1959/60, the earnings increased to 8,565,885 dollars as compared with 8,482,000 dollars in the previous year. The bulk of these exports are to the U.S.A. and comprise both tails and whole cooked fish.

Some concern is being felt in Australia regarding the future of crayfishing as many of the well known grounds are now yielding much smaller catches than in the past and most of the states have recently brought in new restrictions to try and conserve the supplies. In view of this, it is not anticipated that there will be any noticeable increase in volume of exports, in fact it may be that exports may decline in future years.



CANADA

Atlantic

1961 Contradictions

Canada's Atlantic fisheries faced in 1961 a year of contradictions. Overall, the fisheries prospered in Nova Scotia and Quebec, while in Newfoundland and New Brunswick conditions were less favorable.

Good and bad results have sometimes stemmed from this same cause. There was a genuine scarcity of cod, both on the Banks, and more particularly in the trap fishery. Landings from the Banks are utilized mainly in the freezing industry which, however, is not entirely dependent on cod but uses haddock and other groundfish with equally satisfactory results. The freezing operations are concentrated in Nova Scotia, and for most of the year it enjoyed excellent markets.

The salt fish industry is still the major activity of Newfoundland fishermen. It depends largely on the local trap catch and one of the major outlets is the drying industry of Nova Scotia, which converts Newfoundland wet-salted fish into dry salt cod. The export market for the latter product was slow all year and there was a carryover of wet-salted fish in both Nova Scotia and Newfoundland when the new fishing gear got under way last June.

- Unusual behavior of the 1961 run of herring to the Bay of Fundy caused another anomaly between provinces. During the January-August period, New Brunswick herring fishermen landed 91,000,000 lbs in 1960, but only 38,000,000 lbs in 1961, while Nova Scotia herring fishermen landed 55,000,000 lbs in 1960 and 90,000,000 lbs in 1961.

In the first place, the Fundy run included practically no sardine-size fish, wanted by the big sardine canneries of southern New Brunswick, Secondly, the herring ran too close inshore (on the Nova Scotia side of the Bay) to be reached by the big new New Brunswick seiners. Nova Scotia's weirs and small boats took an exceptionally heavy catch, and much of it was smacked to New Brunswick canneries, which built up good stocks of canned kippered herring and the tomato sauce pack of herring in oval cans.

Taking the five Canadian Atlantic provinces as a single region, the final figures for 1961 indicated a significant scarcity of cod on the fishing grounds, a decline in lobster landings attributable to the late spring, and a general tendency to settle back to normal after two years of unusually good fishing. Except for salt cod, markets were good to excellent and prices were generally at higher levels than in the good year of 1960.

Cod Constantly Scarce

- Going back over the early 1961 results, the shortage of cod which had hampered freezing plants through the previous summer and fall continued, although early in the year the heaviest concentration of haddock seen in many years appeared on the Banks. Trawlers returned to port wallowing under deck loads piled high after their holds were filled. Small draggers and longliners joined the bigger vessels, shuttling from Bank to wharf until plants became so congested they could not keep pace with deliveries. Market demand was so satisfactory that haddock fillets moved out almost as fast as they were processed. Cod products were insufficient for requirements, and when the spring fishery ended at the close of April more frozen flounder was on hand than usual, but not nearly enough to counterbalance the scarcity of cod.

Inshore fishermen were less fortunate. Midwinter gales played havoc with lobster pots and the spring of 1961 was unusually late and cold. The Gulf of St. Lawrence and Cabot Strait were blocked by running Arctic ice, a menace which could not be disregarded until May. Government icebreakers toiled to keep the larger ports of the Nova Scotia mainland open, but only in the shelter of the Bay of Fundy were small draggers, longliners and herring seiners able to operate normally.

The late spring had a more serious effect on Newfoundland fisheries than those of the Maritime provinces, but it was preceded by two months of excellent winter fishing. The January-February catch of haddock was an all-time record for winter fishing of that species, and all across the southern part of the island freezing plants operated day and night. Bulk of the receipts was frozen into blocks owing to the small size of the fish.

In February alone, Newfoundland fishing plants produced 4,000,000 lbs. of filleted and dressed groundfish, 3,000,000 of which was haddock. Yet demand was so high that at the end of the month stocks were lower than usual for that date, with supplies of frozen cod very low indeed. Saltfish plants meantime were selling more dried cod than in the previous winter, with steady shipments of heavy-salted fish going to the Caribbean and large orders being filled also for Portugal and Spain.

- Most of this activity stopped, however, early in March as drift ice began to come down from the Arctic. It packed tight to shore along the east, southeast and west coasts, completely preventing inshore fishing and closing one harbor after another. By March 18 St. John's was blockaded, causing local plants to close a few days later. Even in February offshore vessels had been crossing lanes of ice to get to and from the Banks. They often returned with a full load to find they could not enter the home port but were re-directed up and down the coast. Some fish spoiled because of these delays, and export departures

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were also hampered.

Although the opening of the lobster season in Newfoundland came and went with the traps still ice-sheathed on the wharves, and although the west coast herring catch was so small that it was peddled direct to consumers, Newfoundland's total landings during the first four months of 1961 surpassed in both quantity and value those of the same period in the banner year 1960.

Although the over-all Atlantic catch dropped back last summer by about 120,000,000 lbs. after two years of exceptionally good fishing, rising unit costs held the decline in landed value to no more than $2,000,000, and the decrease could have been accepted as merely a return to normal if it had been evenly distributed. But during the summer Nova Scotia and Quebec landings continued to advance, giving the fishermen of those provinces a prosperous season, while Newfoundland and New Brunswick had relatively poor returns, offsetting the gains of the other areas.

Because of the late spring, ice floes ran in the Gulf of St. Lawrence to the end of May and piled up on the coasts. Dragger skippers from Siuris and the Quebec ports were out for fish, however, whenever they could see an expanse of clear water. They found plenty of large cod, as usual, on the edge of the ice. New Brunswick draggers were unable to get into action until several weeks later.

While lobstering in the Gulf was also delayed by the ice, the final results were satisfactory, in the case of New Brunswick, whose major summer catch is made in upper Nirthumberland Strait where the season customarily opens later. Because nature and the calendar were so out of joint, the lobsters were molting at that time and the catch was poor.

● The only good herring fishing in the Gulf was in May and June around the Magdalens, where the schools returned in volume after a three-year absence. The catch brought good prices for the Quebec fishermen. New Brunswick's poor luck in the Gulf was somewhat offset by better results in the Bay of Fundy. There was an exceptionally good catch of pollock, haddock and herring in that area during the summer and even lobstering was better, early in the season, than on the exposed coast of Nova Scotia.

But Nova Scotia, taking all factors into consideration, had an excellent summer, especially in the offshore fishery. Even in May, receipts at Lunenburg totalled a million pounds a week, mostly cod, but with good quantities of halibut too. Through June and July, the trawlers secured full loads in short trips, and by that time the heavy pollock run in lower Fundy had spread to the Nova Scotia Banks. Groundfish were scarce, however, by August.

The swordfish catch was rather small, but it brought good prices, as did halibut. Danish fishing for greysole started well in May, improving to July, with small draggers sharing the good early results of the longliners and later profiting by the heavy pollock run, as were the trap and handline fishermen and even a few seiners. Scallop landings were heavy during the summer, with prices in decline, alewives were more abundant than in 1960, and the waters swarmed with tinker mackerel through the latter part of July.

Local extensions of the salmon season largely compensated for its delayed start.

Salt Fish Trade Rises

● In spite of the less active world market for salt cod, Newfoundland's export of dried salt fish was higher than in 1960, with Puerto Rico and Jamaica the heaviest buyers and in-

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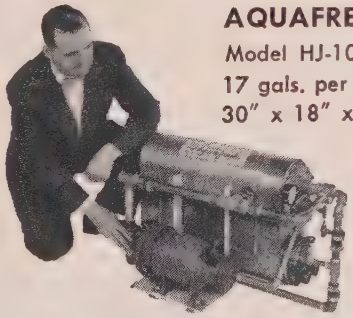

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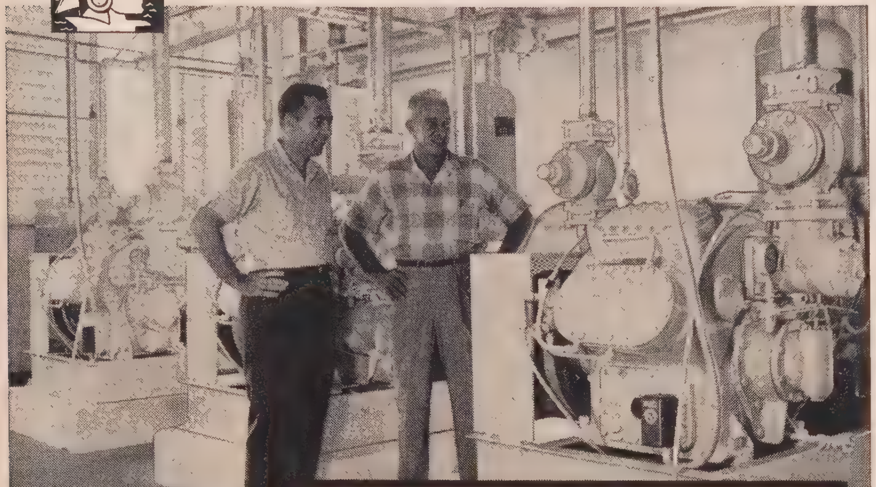
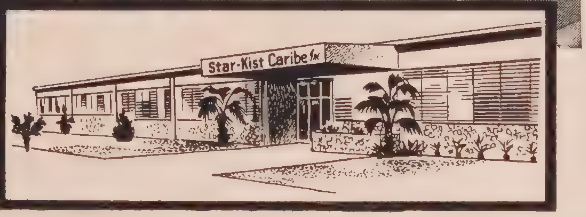


Refrigeration and air conditioning for the entire Star-Kist Caribe plant is provided by six 8-cylinder Vilter VMC compressors. Thomas W. Crump (left), President of Star-Kist Caribe, Inc., and Louis Marincovich, dock and fish room supervisor, are shown inspecting the ultra-modern refrigeration system.



Star-Kist Caribe tuna cannery fronting on the open sea of the Mayaguez roadstead, Puerto Rico. The modern tuna packing facilities here compare with the finest in the world.

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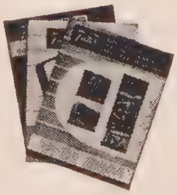

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creased amounts of Labrador cure going to Portugal. But export of wet-salted cod dropped from 16,500,000 lbs. in the summer of 1960 to 5,000,000 last summer, main cause being the drastic reduction in buying by Nova Scotia dryers, influenced by lower world demand.

Forest fires caused some havoc in the fisheries as well as in the pulp and lumber industries. They were a serious threat during the spawning season, just as they were on the Horsefly Sockeye grounds in B. C. Water levels were low and some pools dried up completely. In some areas fish could not reach their spawning grounds but schooled in the mouths of rivers, waiting for higher water. Some of the runs were the best in years.

In Canada's freshwater commercial fisheries, stocks of frozen fish were about 50% heavier at the end of the summer than they had been a year earlier. Spring was late on most lakes, but summer was dry and warm and time was lost by fishermen fighting forest fires.

On Lakes Great Slave and Winnipeg, landing continued their recent downward trend, but there was a steady flow of high quality fish from the northern lakes of Ontario and the prairie provinces, especially Nipigon, Rainy, Peter Pond, Athabasca and Lesser Slave. Perch and smelt in Lake Erie continued to yield heavy returns.

During the past year efforts were made by the Canadian government to facilitate boatbuilding by granting subsidies the effect of which would be to reduce the cost of a 65 foot 70-ton dragger, say, from $65,000 to less than $59,000, and while there was no overwhelming response several operators and fishermen did take advantage of the plan. One of the biggest vessels to be purchased in the Atlantic provinces and delivered last year, however, was a 140 foot trawler built in Holland at what was believed to be about 50% of the price that would have had to be paid to a Canadian yard.

Research along many channels continued. The salmon fishery has caused considerable concern. Recent seasonal catches have been about one-half the 1910-60 average. Extensive biological and economic studies have been made. Natural conditions in spawning areas are being improved; scale readings are being made and data on recovery of tagged or marked fish analyzed. There have been experiments in artificial spawning beds, and a prominent development has been the rearing of hatchery stock to smolt size, a method followed in Sweden, where power development has eliminated natural rearing areas.

ICELAND

New Techniques in Old Fisheries

By **DAVID OLAFSSON**
Director of Fisheries

- This article deals firstly with the Icelandic fisheries in 1961, catches, processing and exports and secondly the settlement of the almost three-years-old fisheries dispute between Iceland and the United Kingdom.

During the first half of the year the Icelandic fisheries are mainly characterized by the big codfisheries going on off the south and west coasts of the country.

During 1961 approximately 500 vessels of all sizes from 1,000 gross tons down to small open motor boats took part in the fishery during this season. The catches, however, were rather disappointing especially as the big deepsea trawlers were concerned. The total catch of cod and related species, caught by trawlers, longlines and gillnetters, during the first half of the year was 206 thousand tons compared to 257 thousand tons in the corresponding period in 1960.

- The main activity during the summer months for a long time has been the herring fishery off the north and east coasts. This fishery, however, for more than 15 years has been extremely unstable and on the whole disappointing. New technique introduced during the last couple of years, mainly in the form of new detecting equipment and the Power Block, has more or less revolutionized the herring fishery and opening up unforeseen possibilities not only during the summer season but also during the winter off the south and west coasts.

The summer season in the herring fishery where 250 vessels participated was the most successful for many years. The catch totaled close to 200 thousand tons compared to 75 thousand tons in the previous year. The most remarkable development in the herring fisheries is the winter season, which showed the first results last year but is now developing fast into a major fishery of the greatest importance to the fishing industry.

It is not an overstatement to say that this new development was made possible only by the new fish detection equipment and by the introduction of the Power Block, which enable the fishermen to carry on with the fishing even under such weather conditions which in earlier times would have prohibited any fishing. This fishing is mainly carried out by vessels between 100 and 250 gross tons.

- The processing of the catches was along the same lines as in the previous years. By far the biggest part of the groundfish catch was filleted and frozen, with salting and drying for stockfish running second and third.

As the herring was concerned, however, the biggest part was taken to the reduction plants for meal and oil production, with a considerable part being salted, and some frozen.

The Icelandic fishing industry is entirely dependent on the export of its production. Approximately 90% of the production is exported, which again amounts to more than 90% of the total exports of the country.

- In 1958, shortly after the Second U. N. Conference on the Law of the Sea, Iceland announced its intention to extend the fishery limits from 4 to 12 miles, measured from straight baselines. This aroused protests from various quarters. At the first of September that year when the 12-mile limit came into force the United Kingdom was the only country which put force behind their protests by sending a de-

Herring Curing in Iceland—Note the remarkably large size of the individual fish. Iceland herring are among the largest in the world, perhaps exceeded in size only by those of the Aleutian Islands.

tachment of the Royal Navy to Icelandic waters with the purpose of protecting U.K. fishing vessels fishing inside the new limits. This led to the development of a dangerous situation in the waters round Iceland when clashes occurred between Icelandic patrol vessels on the one side and U.K. trawlers and units of the Royal Navy on the other side, the odds obviously being heavily against the small Icelandic force.

After long and strenuous discussions between representatives of the two governments a settlement was at last reached in March, 1961.

- In the Second U. N. Conference of the Law of Sea, proposal by the United States and Canada, providing for a six miles territorial sea and an additional zone of six miles for fisheries, with a transitional period of 10 years for foreign vessels in the outer six miles, had been only short of one vote to get the required two thirds majority. It was therefore obvious that the 12 miles had good majority among nations of the world. In the summer of 1960 Norway and the United Kingdom concluded an agreement concerning the rights of U.K. trawlers in Norwegian waters, on the basis of this proposal.

The Icelandic-United Kingdom settlement is, although based on the same principle of a transitional period, somewhat different.

Firstly, it provides for the acceptance of the 12 miles limit in Iceland by the U.K. Secondly, the U. K. agrees to changes in the baselines system around Iceland which lead to a considerable extension of the area inside the 12-mile limits.

Thirdly, U.K. trawlers shall have the right to fish in certain areas and at certain times in the zone between 6 and 12 miles for the period of three years. Both the areas and the periods are limited in extent and certain important areas are reserved entirely for Icelandic longliners and gillnetters. Fourthly, the Icelandic government announces its intention to work at a further extension of the fishery limits, but agrees to give the U.K. government six months notice of such extension. In case of a dispute in relation to such extension the matter shall, at the request of either party, be referred to the International Court of Justice.

A few months later the same agreement was made between the governments of Iceland and the Federal Republic of Germany, but Germany has for a long time been second in importance in the foreign fishing around Iceland.

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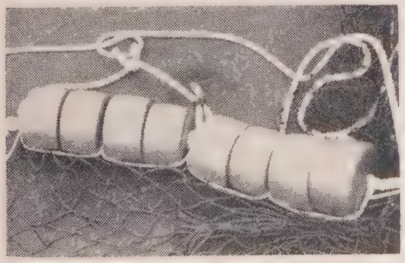

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NORWAY

Overfishing Menaces

- Volume of last year's Norwegian fish landings was slightly smaller than in 1960. Owing to further depletion of the country's important winter herring fishery there was a marked shifting towards landing of lower quality herring and related catch objects, and a subsequent decline in production and exports of herring goods for human consumption. The cod fisheries developed better than expected. They do not suffer from a natural crisis as the case is with the winter herring. The menace of overfishing is felt, however. Norway's other fisheries were maintained at a normal level.

The first-hand value of the 1961 landings showed some increase. The better landings of the higher priced cod contributed to this increase. The fact that considerable price subsidies were paid was the main cause.

An event of yet not measurable importance was the enforcement from April 1, 1961, of a 12-mile fishery limit succeeding the former 4-mile limit. One of the objects of the new regulation is to obtain a reduction in the international fishing pressure in waters adjacent to the Norwegian coast, and besides that to avoid the frequent collisions between foreign trawl gear and Norwegian stationary gear. From fishing circles it was also maintained that the extension of the fishery domain would protect the fish resources; and that may be true, insofar as international fishing on the grounds within 12 miles will undeniably be reduced.

By agreement, British fishing vessels are allowed fishing rights in the 6-12-mile belt until 1971. Norwegian trawlers of more than 300 gross register tons are also admitted to the same belt, while those of less than 300 tons most probably will be allowed also in the 4-6-mile belt.

- In proportion to Norway's aggregate fish landings those of winter herring have in the course of a few years fallen from a level of 55% to only 5%, and a graver problem has in modern times never faced the industry. An intensified exploitation of related catch objects has with the help of subsidization to a certain degree compensated the fishermen and the fleets for the loss of income and employment they otherwise should have experienced. The reparation landings have, however, been quite unable to make up for the qualitative capabilities of the winter herring; nor have they in any way set aside the great advantage, that the winter herring fishery took place during January-March, when the herring fisheries are rather unproductive elsewhere in Europe. The additional landings have mainly been utilized for meal and oil. Herring products for human consumption have accordingly been processed at a more limited scale.

The majority of the 1961 supplies for meal and oil was landed in North Norway, while a downright famine developed within the South Norwegian reduction industry. Several of South Norway's 58 meal and oil plants were completely idle during 1960 and 1961. They have a daily capacity of 40,000 tons. North Norway's 18 plants with a daily capacity just short of 10,000 tons had, however, a busy time last year. Some of them had continuous production for six or eight months even without time for a check-up of machinery.

An official commission has reported on the position of the southern industry. The prospects of improvement are small, as its chief source of supply—the winter herring—is expected to remain in a state of exhaustion for years.

The report includes suggestions for keeping the industry intact during the famine years. Besides, it indicates demolition of machinery on the ground that the manufacturing capacity is generally over-developed. Moving of machinery to North Norway has also been discussed and may prove to be a realistic proposal.

The displacement of landings from south to north, the landings of the different catch objects as well as the utilization of the grand total of these landings is illustrated in table below.

The consequences of the winter herring depletion will be further illustrated by an accompanying table regarding the exports of certain herring products.

Norway Fish Production and Value

Product	1957		1958		1959		1960		1961*	
	Metric Tons	Million Kroner	Metric Tons	Million Kroner	Metric Tons	Million Kroner	Metric Tons	Million Kroner	Metric Tons	Million Kroner
Herring and Sprat	1,019.79	257.6	613.20	165.6	727.78	215.5	698.37	197.8	553.44	160.7
Cod and By-products	249.14	183.3	281.20	217.0	274.37	233.2	227.85	194.6	252.11	225.6
Other Fish and Shellfish	304.96	185.8	344.45	199.7	363.41	231.3	416.59	272.1	510.70	288.3
TOTALS	1,573.89	626.7	1,238.85	582.3	1,365.56	670.0	1,342.81	664.5	1,316.24	674.6

*Partly estimates

Exported Herring Products

(METRIC TONS)

Exports of	1956	1957	1960	1961*
Iced Herring	58,476	57,138	29,935	10,750
Frozen Herring	44,162	45,686	40,129	11,000
Cured Herring	82,554	62,883	31,741	9,000
Canned Kippers	4,907	4,490	4,299	3,500
Canned Soft Herring Roes	1,209	1,810	1,507	800
Herring Meal	173,716	120,468	88,709	114,000

*Estimated

Fat herring and *small herring* are the immature descendants of winter herring, North Sea herring and local herring tribes. They frequently appear in the same schools, and the purse seine catches will therefore very often be composed of a number of size groups. They will therefore most readily be bought for reduction. Catches containing a majority of big fat herring will be bought for freezing, for bait, or in the proper season for curing. Catches of small herring will be bought for canning of ¼ dingley two and one layer "Sild-sardines." The fat and the small herring fisheries will always show considerable variations from year to year.

Sprat landings are practically exclusively used for canning of *"Brisling Sardines"* and for spicing. The canning season lasts from June 1 to October 15 and the landings are subject to strict rules as to fat contents, uniform size and other measures intended for creation of a prime canned product. In 1961 about 433,000 standard cases (100 ¼ cans) were packed. This is less than average.

Recent year's expansion of the Norwegian *herring fishery in Icelandic waters* is resuling from an attempt at improving the situation caused by the failing winter herring fishery. The maintenance of the traditional production of cured and spiced Icelandic herring has in recent years been laid in the hands of driftnet fleet, while the purse seine fleet has been charged with raw material supply for the South Norwegian reduction industry.

After being relieved of the curing process the seine fleet has been much more productive than before. A transport system has been established and the fishing vessels are also benefiting by the assistance of a research vessel, whose task is to report on the movements of the main schools. A naval frigate patrols the fishing fields. She is fitted for repair work, renders medical and all other emergency service.

The 1961 fishing was good. From the end of June to the middle of August 88 purse seiners caught 87,800 tons, which were landed for reduction in Norway. A purse seiner landing 21,000 hectolitres (about 2,000 tons) in Norway on her own keel from seven trips had the season's top result. The driftnet fishing having August and September as main season was not as good as the purse seine fishing. The drifters landed 148,000 barrels cured and spiced herring.

- *Capelin*: The fact that the distinction between capelin fishing and herring fishing is negligible should make it pardonable to mention this fish in connection with herring. This small Arctic fish is in reality a member of the *salmonide* family.

Arctic waters have vast resources of capelin. More importance has been attached to this fishery in recent years. Norway's 1961 landings set a new 217,168 tons record—more than twice the landings in 1960—and still only a fraction of the schools were removed.

Commercial capelin fishing takes place off the North Russian Kola and Murmansk coasts and of the Norwegian Finnmark coast when the schools of spawners gather there during February, March, April and part of May. The schools are solely composed of spawners, none of which outlives the spawning. The capelin matures in its fourth year.

In 1961 the Norwegians could begin the fishing in the middle of February, or a full month earlier than usual. The fishing was very good and several purse seiners had landings from 30,000 to 36,000 hectolitres for a two months' season.

The fish's high oil contents of 12% was rather unusual as the rule says 4 to 6%, most frequently only 4. Its astonishing fine condition in 1961 was supposed to have connection with its advanced arrival and released a desire for obtaining fishery contact with the real deep-sea sources of capelin in the summer season, when the capelin's condition at least theoretically should be much better than during the dark winter months.

Payment of subsidies to the herring fishermen has been highly necessary owing to the progressive worsening of the winter herring fishery and the collapse of the international fishmeal price in 1959. Such financial support has been given the Norwegian fishermen in the form of price subsidies on all raw material of herring, capelin, sandeel and Norway pout for reduction. The government has had as its politics to keep the fishermen and the vessels as fully employed as possible, and to give them time to adapt themselves to the changed conditions. On the part of herring and related catch objects this politics cost approximately 64 million kroner, which includes 45 million kroner from public funds and 19 million kroner, which was the rest capital of a special fund for regulating of herring prices owned by the herring industry.

The Cod Fisheries

- By way of introduction it is to be remarked that the menace of overfishing has made itself felt in the Norwegian cod fisheries. This has special reference to the population of spawning cod, that so-called "skrei." The extensive international trawl fishing in the Barentz Sea and in the Norwegian coast areas depends chiefly on the state of the Norwegian Arctic cod tribe. It is a fact that the toll taken by small meshed trawl nets on the cod population at its earlier stages, has long ago reached proportions which are inconsistent with the principles laid for maintenance of sustained maximum

Disposition of Norway Herring and Sprat Landings

(DATA IN METRIC TONS)

Year	Fresh	Frozen	Cured	Canned	Meal & Oil	Bait	Total
1956	66,028	45,268	138,377	32,073	1,077,663	20,722	1,380,131
1957	62,838	51,334	108,729	44,810	737,691	14,378	1,019,790
1959	47,727	52,251	108,339	31,067	380,371	15,992	613,204
1959	47,727	53,251	108,339	40,925	459,792	16,295	726,329
1960	39,400	51,300	75,700	36,450	614,000	N.A.	816,850
1961*	17,500	10,550	45,000	33,000	672,000	N.A.	778,050

*Partly estimated

Herring & Related Catch Objects

(IN METRIC TONS)

Variety	1956		1957		1960		1961*	
	South Norway	North Norway	South Norway	North Norway	South Norway	North Norway	South Norway	North Norway
Winter Herring	1,145,859	---	795,582	---	300,092	51	69,042	---
Fat Herring	74,424	25,889	29,070	16,236	27,212	35,003	13,505	93,883
Small Herring	30,183	64,872	46,322	83,302	40,428	191,579	32,787	211,366
Sprat	3,946	1,665	9,514	10	7,937	347	8,815	---
Icelandic Herring	26,291	---	30,600	362	76,669	581	103,000	2,541
North Sea Herring	6,172	---	8,792	---	18,475	---	18,498	---
Capelin	---	66,079	---	70,022	---	92,765	---	217,168
Sandeel	1,435	---	3,220	---	13,688	---	5,400	---
Norway Pout	830	---	202	---	26,482	---	16,458	---
District Total	1,289,140	158,505	923,302	169,932	510,983	320,326	267,505	524,958
Grand Total	1,447,645		1,093,234		831,309		792,463	

*Partly estimated.

yield. The fish is not given time to grow up; nor are the many landed small cod commercially profitable.

Consistent with agreement in accordance with the International Fisheries Convention of 1946 (London), the trawl mesh used north of 66° North is in 1962 to be extended from 110 to 120 millimetres. The Norwegian Ministry of Fisheries intends, however, to go further than that. In a report submitted for approval of the Storting (the national assembly) the Ministry states its intention of having the mesh size used by Norwegian trawlers extended from 110 to 130 mm. in light (material) trawl nets and to 140 mm. in heavier twine trawl nets. As Norway has not a great number of trawlers, the resolution may look extreme and has also been criticised from that angle. The Ministry points, however, to the importance of a favorable starting position in the country's efforts directed at obtaining the consent from other nations in adoption of joint stricter measures for protection of the fish resources in North East Atlantic waters.

More cod was landed in 1961 than 1960. This was especially the case in Finnmark, where much of young cod and other fish had gathered on the edge of the continental shelf, so that 77,378 tons of different kinds of groundfish were landed during the Finnmark season. The 140 trawlers taking part had special success. Their share of the mentioned total landings was 33,789 tons, which were a good share considered that 1,800 other craft took part.

The cod fishery off Western Greenland (included under "Other Types of Cod in the table) was also good. About 14,000 tons of salted cod, together with a supplementary production of frozen fish (halibut and rosefish) and liver oil, were landed from 80 trips. Salted cod was paid for at kr. 1.80 and kr. 2.10 per kilo for spring and autumn fish. Liver oil fetched only kr. 1.10 per kilo, and several skippers declared that their trips might have been more profitable if they had dumped the liver and filled the holds with salt fish instead of oil.

● The reduction from 77,864 tons in 1960 to 64,679 tons last year in the landings of saithe was mainly due to the unfavorable weather conditions during the winter months. It must, however, also be referred to recent scientific observations stating that the mature saithe seems to have started an emigration from the usual spawning places off West Norway to other foreign grounds. This phenomenon may, if the emigration continues, at least influence future fishing.

Halibut: Less of distant water as well as of near water halibut was landed last year compared with 1960 and 1959. The best distant water fishing took place in the Denmark Strait and elsewhere off East Greenland. Some vessels shifted between East and West Greenland, and some between Newfoundland and West Greenland. The fishing on the Canadian side of the Atlantic proved, however, to be rather unremunerative, and the longliners fishing there changed to porbeagle shark fishing.

The halibut in nearer deep sea waters gave good catches in the first part of the season. The autumn fishing was, however, spoiled by the most unfavorable weather.

The Norwegians also operate a gill net halibut fishery. Back in the 1930's, when the gear was invented, the fishery gave for a time such prolific catches that the authorities prescribed a two months' closed season (January and February). which has been maintained ever since. The net fishery is worked on the theory that spawning migration takes place in the late autumn from the ocean depths to the fjords, where the halibut most likely finds the bottom layers to be of more constant and suitable temperature for the spawning than outside. The nets are set on the thresholds of the fjord mouths at depths from 300 to 700 meters. Nylon twine of, for instance, 3 kilos weight per 1,080 meters is used for making nets of 19" mesh size. A favorable mesh size will be a question of selectivity, as the male spawner is smaller than the female. Sixteen inches is the smallest mesh size allowed.

Porbeagle: The Norwegians took up porbeagle shark fishing as a novelty of the year in waters along the North American east coast between Newfoundland and Boston. The longliners took good catches and 15 trips amounting to 1,092 tons of porbeagle and 125

Norway Cod Landings by Type

(Data in metric tons of fish, dressed, headless)

Type	Average 1950-57	1958	1959	1960	1961
Skrei (Mature Cod)	89,787	70,589	89,826	75,024	77,580
Finnmark (Young Cod)	45,709	69,299	52,484	39,479	59,404
Other Types of Cod	106,676	119,778	110,639	98,937	98,884
TOTAL	242,172	259,666	252,949	213,440	235,868

Norway Miscellaneous Fish Catch & Value

(Dressed Headless, Except Salmon and Prawn)

Variety	1959		1960		1961*	
	Metric Ton	1,000 Kroner	Metric Ton	1,000 Kroner	Metric Ton	1,000 Kroner
Saithe	80,828	42,594	77,864	43,657	64,679	38,498
Haddock	37,510	26,945	38,359	29,076	50,397	40,666
Ling	13,976	14,241	14,178	15,795	11,232	12,920
Cusk	15,478	11,074	21,493	17,170	19,589	16,425
Halibut	5,229	16,830	5,663	18,867	4,050	15,058
Greenland Halibut	4,307	3,034	6,662	4,562	7,877	5,601
Bluefin Tuna	2,522	4,325	3,280	5,802	6,582	12,171
Mackerel	17,256	11,253	19,465	12,136	14,659	11,157
Dogfish	19,122	7,496	25,655	11,122	30,736	14,419
Porbeagle	910	3,586	1,484	5,734	2,074	6,830
Salmon, Atlantic	1,233	13,766	1,422	17,004	1,411	16,765
Prawn, deep water	9,707	30,302	9,616	29,977	9,677	30,533

*Partly estimates.

tons of halibut were landed at Aalesund. The individual trips gave from 50 to 115 tons of porbeagle and up to 35 tons of halibut (a combined trip). The first porbeagle landings were sold at kr. 4 per kilo. Buyer reaction to the unaccustomed volume of the supplies necessitated lowering of the price. In the longline fishing for porbeagle some specimens of swordfish were also taken. This fish appealed to the taste of the Aalesunders, and the fishermen —perhaps also with a view to exports —will try to combine porbeagle and swordfish catching in the coming season.

Tuna: Last year's landings of Bluefin tuna of 6,582 tons were the highest since 1955 and brought the 161 purse seine outfits taking part a gross income of kr. 12,473,000. The first catches were landed in the beginning of July and the last in the middle of October. The fishing was remarkable for the fact that all catches consisted of big fish. They weighed more than 150 kilos on an average. Schools of small fish were not observed, and the fishermen looked on this lack of recruitment with a certain anxiety. Another interesting feature of the season was the recapture of two American-tagged fish. They had been released in the vicinity of the Bahama Islands on June 1 and 10, 1961, and were recaptured September 28 and October 10 after 119 and 118 days. The recaptures are establishing the first real proof of a Bluefin migration from American to Norwegian waters, though two American tagged Bluefins were recaught in the Biscay Bay in 1958. The two Norwegian caught Bluefins were big fish, weighing 180 kilos each, dressed headless, and they were also slender, bearing the signs of their long voyage. It must be added that the Norwegian fishermen are well acquainted with this slender type of Bluefin, which they have named "long-tailed tuna."

A Norwegian expedition consisting of a research vessel, seven fishing vessels and a freezer mothership was sent off to West Africa in 1960 mainly for exploring the possibilities of tuna fishing.

In the second half of October the research vessel observed considerable schools of tuna off Ghana, but was unable to catch any with her herring purse seine net shot from two boats. An attempt at hook and line pole fishing gave about two tons in 45 minutes. When three of the fishing vessels came to the position, the schools had disappeared. The vessels then sailed for waters off Dakar, where purse seine and longline fishing were attempted mostly in vain by the fishing vessels. The research vessel sailed for Norway in November, and the 1st of February, 1961, the freezer was dismissed. The fishing vessels then took up longlining on Senegal Bay. They took rather good catches of mackerel sharks, Yellowfin and some swordfish, but operations were hampered by the limited freezing capacity of the vessels. When they sailed for home they had, however, upwards to 35 tons of these types of fish.

The experience was mostly disappointing. The purse seine nets used for big fish catching by the regular Norwegian cutter fleet proved to be unsuitable. They were partly cotton twine nets and did not stand the climate. As to the longline fishing, the Norwegian vessels obtained similar

Stern Trawler HEKKTIND is one of the new Norwegian fishing vessels of this type, built in 1961. She is 154′ in length and is powered with a 1,300-hp. diesel.

catches per unit of line as the Japanese took. The Japanese were, however, able to shoot and haul a longline of 70 nautical miles within 24 hours, while the Norwegians were only able to operate one-tenth of that length of line within the same time. The advantage with the Japanese method was that their vessels were fitted with line-hauling gear capable both of hauling and coiling the line.

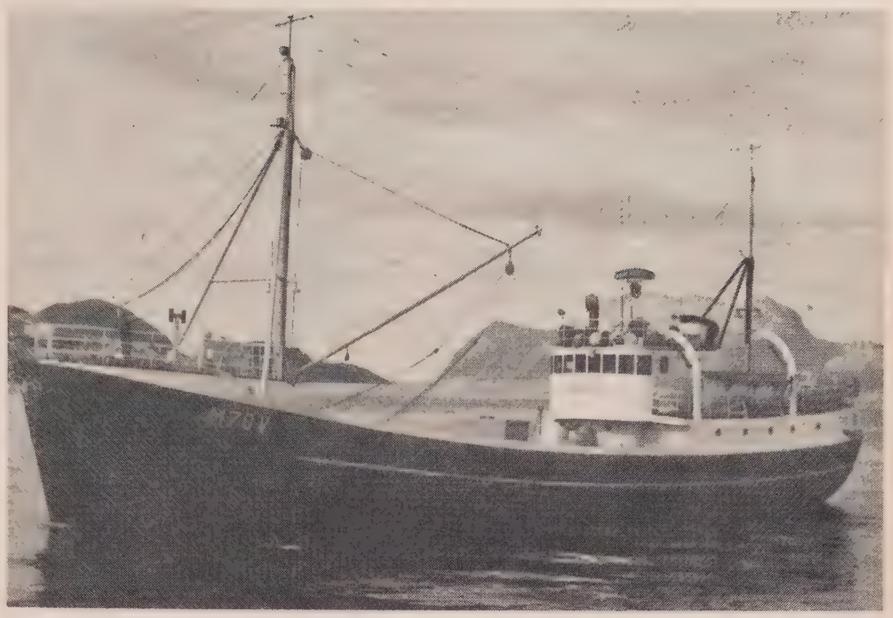
The Norwegian experiment rose out from the necessity of finding new employment during the winter for the group of combined purse seiners and distant water longliners, the economy of which was put in jeopardy owing to the failing winter herring fishery. The idea was to give the crews opportunity of making use of their capabilities as purse seine and longline men under the contemporary theory that usual Norwegian methods and gear might be just as serviceable as those of other more experienced tuna fishing nations.

- The Norwegians are not very happy about recent years development in the fishing industry. Subsidization from public funds amounted to 88 million kroner last year—45 million for the herring fisheries and 33 million for the cod and other fisheries. The costs of fishing have had a steady upward trend. It seems to be specially difficult to find remunerative employment for the big group of vessels originally built for purse seining of herring. The purse seiner is most often built for loading as heavy a cargo as possible and is consequently not fitted with an engine sufficiently powerful to make her suited for trawling. Several of these vessels are good deep-sea longliners, but they are individually too big ships to be suitable for anything else than herring fishing in the coast area. A fight between trawlermen and line and net men is still going on in Norway.

The result is that people have not made up their minds as to the type of ship or the methods which are to be preferred. The truth is, that very few new Norwegian fishing vessels have been built recently and few are under construction.

Three types of vessels are, however, more asked for than other.

No. 1 is the modern trawler of distant-water type. An example is the newly built 154′ o. a. length stern fishing trawler *Hekktind* designed by Bergens Mekaniske Verksteder, Bergen. She is fitted with a 1,300-hp Werkspoor diesel, nozzle rudder and hydraulically operated trawl winch. This vessel is fully occupied with delivering fish to one of the North Norway filet freezing plants and have since April last year had remarkably good catches. She loads all her fish in light alloy boxes on pallets. Two 220′ stern trawlers are under construction in Bremerhaven at Rickmers Werft for Norwegian account, while B. M. V., Bergen, is building a second *Hekktind* and A-S Stord Verft, Stord per Bergen has a 185′ stern fishing trawler on the stocks for North Norway. A full freezing factory stern trawler of 205′ o. a. length is under building at the Liaaen Yard at Aalesund. This vessel will, instead of the usual meal plant, be fitted with a grinder and will utilize offal and small fish to produce frozen food for mink or other fur-bearers. She also will be fitted for operations in tropical waters.



SEVRIN-ROALD is a 103′ Norwegian longliner which has specialized in halibut fish—in the western Atlantic in the vicinity of Greenland and Newfoundland. In 1961 she worked these same waters successfully for porbeagle. She is convertible to purse seining, as indicated by the seine skiff davits in this picture on the fjord off Aalesund.

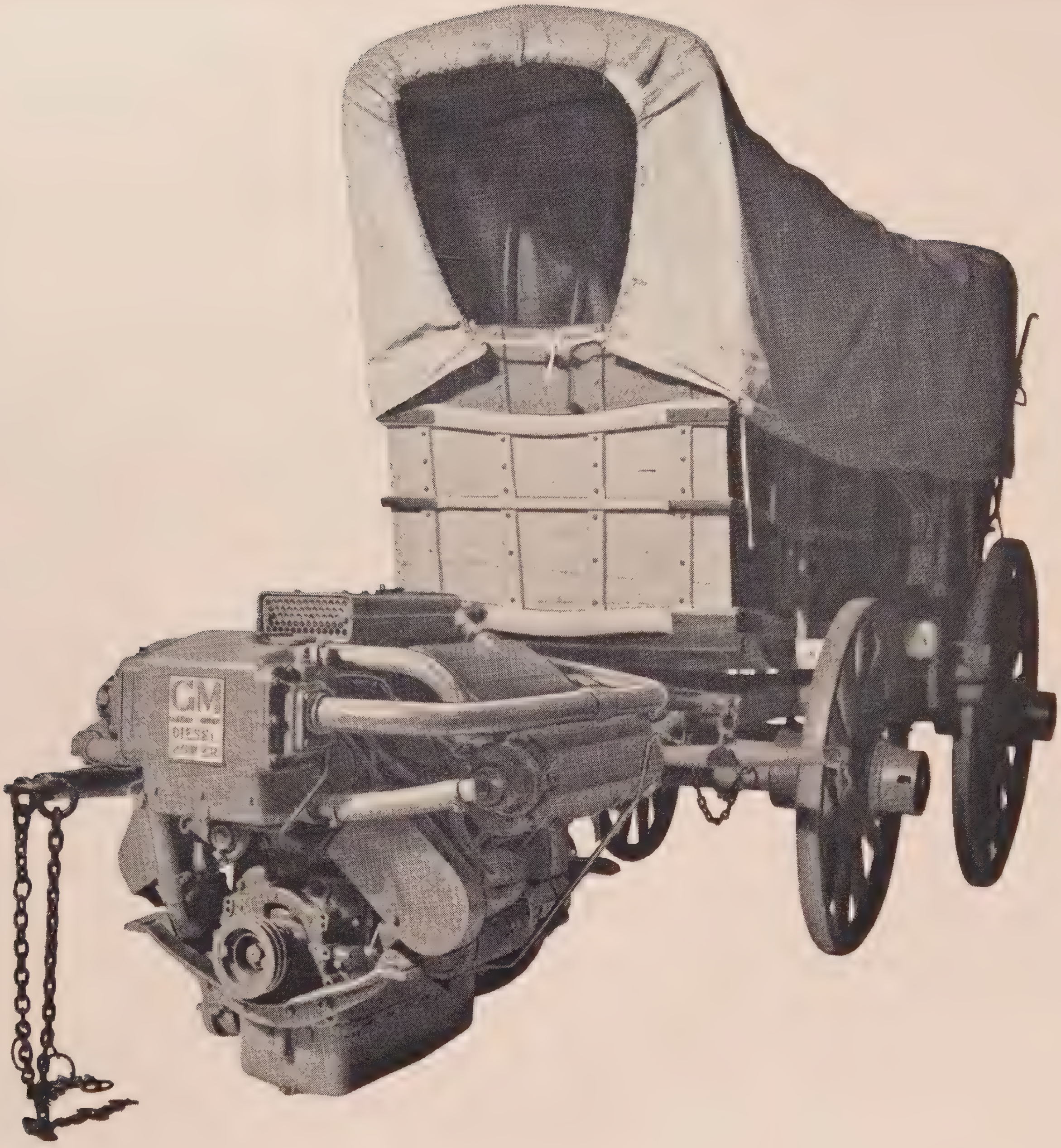
No. 2 *type* is a combined purse seiner, trawler and longliner of 120′ o. a. length, fitted with a 600-hp. Wichman diesel. A division of her hold is fitted as a freezing hold. It will be used for storing bait when outward bound and for storage of halibut and other high-priced fish during the operations and homeward voyage. The operational program for this vessel, for instance, may be about like this. Trawling on the Finnmark coast during the April-June young cod season, longlining (or trawling) off Western Greenland July-October, coastal herring purse seining November-February and capelin purse seining February-March. This type of vessel has proved good at trawling, but only few of them have been built.

Type No. 3 is an 80′ vessel built for longlining cod and haddock on the grounds off the coast in winter, and for deep sea longlining (North Sea-Iceland) in summer. She is also fitted with a view to trawling of North Sea herring, sandeel or Norway pout. In this type of vessels the Norwegian will often prefer a semi-diesel engine. The deck machinery including winch and line hauler will be hydraulically operated.

- Subsidization is not a popular thing with the taxpayer. Regard must, moreever, also be taken to the processing industry, and it would certainly demand much higher public expenses than those paid to have a bankrupt fleet lying idle and the processing industry also going idling. One has to try to avoid the less remunerative catch objects and products, and it seems as if that way is just what the industry aims at.

The exports of Norwegian fish products were accomplished in the usual way to the usual markets in 1961. Owing to the considerable decline in the processing of herring products for human consumption, the total export value fell to a level of some 860 million kroner compared with 935 million kroner in 1960. The export prospects are considered good, but the rising costs of production are causing concern.

The eventuality of Norway being a member of the European Common Market has been discussed within the fishing industry, and has been readily accepted by the commercial side, while the fishermen show some reluctance especially on the prospects of allowing foreign fishermen to Norway territory.



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Aggressive Expansion

- Aggressive expansion of fishing activities in Bering Sea, off South and Southwest Africa, and in the Northwest Atlantic marked the 1961 program of the U.S.S.R.

At the opening of 1962 statement was made in Moscow that the Japanese winter expedition of two fleets to Bering Sea would encounter stiff competition from the largest number of Soviet craft ever to fish the area. This obviously implied further step-up of the heavy all-year fishing pressure applied by the Soviet Union in the winter of 1960-61.

Soviet vessels also were observed throughout the year fishing at least on a prospecting basis south of the Aleutian Islands and the Alaska Peninsula, in the vicinity of Kodiak Island and into the Gulf of Alaska.

- In addition to its vigorous expansion on Bering Sea, the U.S.S.R. pressed further west and south in its operations in the Northwest Atlantic, its trawlers fishing actively on Georges Bank only a short distance from Boston, Mass., in the fall of 1961.

The first reported observation of these operations so close to the New England coast was in early October, when 20 Soviet trawlers and 15 drift gill-netters were observed fishing for herring on the northern edge of Georges Bank.

Later in the month as many as 75 to 100 Soviet vessels were reported in the vicinity at one time. Among them was a large stern trawling factoryship on the order of 280′ to 300′ in length which appeared to be catching about 4,000 lbs. of fish per hour of trawling.

There were a number of combination drifter-trawlers from 150′ to 200′ in length which fish as drifters at night and as trawlers in the daylight hours. The catches of these boats were transferred daily to a processing and transport vessel.

- High seas fleets serving motherships, or factory-trawlers processing their own catches, are reported to account for about 75% of the Soviet catch. Fishing vessels reported under construction in the U.S.S.R. in the late fall of 1961 are large, improved types, such as the *Leskov* and *Mayakowsky* factory-trawlers of 3,600 metric tons displacement, and motherships of up to 19,500 tons. Twenty-three vessels of the *Leskov* class have been ordered from Gdansk, Poland. This shipyard has delivered eight vessels of this type. The vessels are equipped with four Baader filleting machines designed to fillet various sizes of fish. With smaller equipment, *Mayakowsky* type vessels are being built at Nikolaev on the Black Sea. Five have been delivered, with the number on order unknown. Both types of stern factory-trawlers are operating in the North Atlantic and in waters off West Africa, and may soon be in the North Pacific.

Two classes of motherships are now being constructed in Polish shipyards for the Soviets. The newest displaces 19,500 metric tons and will be able to stay at sea for 75 days. It is designed mainly to support herring operations, but can be diverted to processing groundfish. The vessels have stern ramps similar to whalers or factory-trawlers to bring aboard catches in cod ends left by fishing vessels. The other type of mothership displaces 17,000 metric tons and eight of these have been delivered from Polish yards with 11 more on order. This ship is manned by a fishing and processing crew of 270.

- An example of the large catch of mothership fleets was the 3,800,000 pounds of herring processed aboard the *Iokhannes Vares* during three months' operation in the North Atlantic. This Soviet mothership serviced 100 fishing vessels.

At Leningrad, electronic computers have been developed to operate gear, engines and processing equipment on large factory-trawlers. The computer, aided by underwater television, will regulate the trawl depending on depth of fish concentrations. A 5,000-ton trawler, equipped with computer, will require a crew of only 22; it reportedly will be almost five times more efficient than present trawlers and reduce production costs by 70%.

- Another major extension of Soviet fishing activity in 1961 was to the South and Southwest Africa areas, which were prospected during the year by a powerful fleet. (Details of Soviet fishing in this area are given in the article on South Africa and Southwest Africa fishing in this *International Yearbook*.)

- The fisheries of the U.S.S.R. have nearly doubled production within the past decade. The large increase in the Soviet catch has been due largely to expanded high-seas fishing operations which are continuing to broaden in scope. This remarkable progress is indicated in the following landings for selected years:

Year	*Quantity metric tons*
1930	1,283,000
1940	1,404,000
1950	1,755,000
1956	2,849,000
1960	3,175,000

The distribution of the Soviet catch by major fishing areas shows that marine landings exceeded the yield from inland waters for the first time during the 1950's. The Northern and Far East fishing areas are now major contributors to total fish production.

- The U.S.S.R. began fishing in Northwest Atlantic waters in 1956 after conducting exploratory cruises in 1955. According to the International

Commission for the Northwest Atlantic Fisheries (ICNAF), the Soviets have reported annual catches that have rapidly increased from 17,000 metric tons in 1956 to over 258,000 tons in 1960.

The Soviet catch in Northwest Atlantic Convention waters in 1960 by species was:

Species	*Met. Tons*
Cod and Haddock	139,612
Ocean Perch	104,147
Halibut	237
Flounder	4,392
Others	9,686
Total	258,074

In a period of four years, the U.S.S.R. fisheries have expanded to account for about 12% of the over two million tons of fish taken annually in the Convention Area and to lead the other member nations in the ocean perch catch. Fishing for ocean perch, cod, and haddock has been conducted on the banks off Newfoundland and Labrador, moving to Georges Bank in 1961.

- Continued growth of the Soviet fishing fleet, including both fishing and processing vessels, is forecast in an article by Commander Kassell in the November, 1961, in *U.S. Naval Proceedings*.

In this article, entitled "The Fishing Fleet of the Soviet Union," he describes the problem posed for the Western world by the growth of Soviet high-seas fisheries. He views this problem as two-pronged—one economic and the other strategic. Increased catches by the Soviet wide-ranging fleets are expected to result in decreasing markets for such fish-exporting nations as Iceland. Of strategic concern are the 200 to 400 trawlers and other large Soviet vessels fishing the year round in Atlantic and Pacific waters near the coasts of North America. Plans call for the continued growth of the ocean-going fleet, including the building of 68 factory-ships with freezer installations and 47 refrigerated transport ships. Also 26 base ships or floating canneries are to be obtained. The majority of the fleet, however, will continue to be comprised of trawlers and seiners.

- A new pattern for the preliminaries of the annual conference of the Japan-Soviet Fisheries Commission was followed at the end of November, 1961, when delegates to the technical sub-committee of the commission convened in Moscow some two months in advance of the actual negotiations due to commence in Moscow Feb. 26, 1962.

Announced purpose of this new plan was the shortening of the period of the actual negotiations by disposing of some of the time-consuming technical discussions in advance. In 1961 the conference extended from late January well into May, handicapping the Japanese fleet in reaching fishing stations in the North Pacific following conclusion of the annual understanding as to fishing regulations and quotas.

Under the new arrangement it was deemed possible to start the conference proper one month later than in 1961, but whether this will permit earlier conclusion of the meeting remains to be demonstrated.

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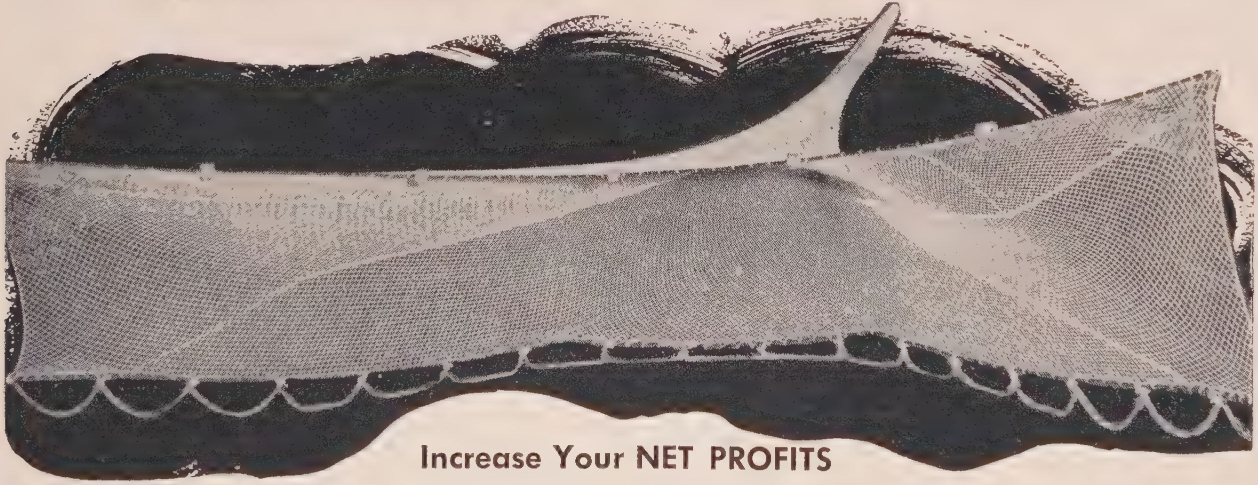

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SOUTH AFRICA and S.W. AFRICA

Record-upon-Record

By **PETER HJUL**

- Another substantial increase in the pelagic shoal fish catch;

Further developments in tuna fishing using the Japanese long line method;

Appearance in Southern African waters of Soviet and other foreign trawlers—

These were among the main features of the South and South West African fishing industries during 1961.

Writing for this *International Yearbook* in 1959 and 1960, I have each time reported a new record fish catch both from the waters of the Cape and of Walvis Bay in South West Africa.

In 1959 the Cape catch of pilchards (*Sardinops, ocellata*), maasbanker (*Trachurus trachurus*), and mackerel (*Scomber japonicus*) rose from 298,854 short tons the previous year to 342,776 tons, and Walvis Bay landings were 301,696 tons.

In 1960 there was another increase and a new record: 423,524 tons for the Cape, plus an additional 28,243 tons caught in a special short season at the end of the year, and 310,000 tons for Walvis Bay. From this 1960 catch, came 90,204 short tons of fish meal, 5,997,363 gallons of fish body oil, and 29,984,227 lb. of canned fish in the Cape; and 55,150 tons of fish meal, 14,905 long tons of fish oil, and 4,700,000 cases (about 160,000,000 lb.) of canned fish in Walvis Bay.

Pumping Pilchards ashore at a South Africa cannery and reduction plant. Methods and equipment are of thoroughly modern type and the fish are taken near the packing plants.

- Now, at the risk of being monotonous, I must report yet another record season, the fourth in succession. In Cape waters the season got off to an amazing start when boats ran into some of the greatest concentrations of fat, oily pilchards yet seen off this coast. Not only were these mature fish in top condition, but the shoals were also found closer to the west coast factories than in the previous three or four years. It is also interesting that tags inserted two to four years before in Walvis Bay were found in 12 fish during the season, showing that there is some movement from the South West African pilchard waters 700 miles south to the Cape.

In January, pilchards comprised 69,879 tons of an 80,445-ton shoal fish catch; in February landings rose to 94,051 tons pilchards and 5,925 tons maasbanker and mackerel, the highest ever in one month of fishing.

At this stage the oil yield from a ton of fish was averaging more than 20 gallons, and one factory reported that it had obtained 33 gallons. From March to the end of July the season dropped off from its early peak, but by its close 542,429 tons of shoal fish

Modern Cannery and reduction plant at Walvis Bay, the great fishery center of South-West Africa.

had been taken by a fleet of 140 boats serving 15 factories—443,499 tons pilchards, 41,651 tons maasbanker, and 57,429 tons mackerel. From these landings, the factories produced 119,388 short tons of fish meal, 9,725,046 gallons of fish body oil, and 43,226,744 lb. of canned fish.

To be added to the Cape landings are 375,000 tons of pilchards caught in South West Africa by 67 boats serving six factories at Walvis Bay. For 1961, therefore, the shoal fish catch totals 917,429 tons, and the pilchard bulk of this total—818,500 tons—is the largest catch of this fish ever taken in a season by any fishery anywhere in the world.

Final figures for bottom trawling, rock lobster, line fish, and for the November-December season, when catching of maasbanker and mackerel is permitted off the Cape coast, are not yet available, but they will add at least 160,000 tons to the shoal fish catch, and so in 1961 South and South West Africa join the small group of fishing nations whose yearly catch exceeds 1,000,000 tons.

The following catch figures (in short tons of 2,000 lb.) show how the South and South West African catch rose steadily to the 1,000,000-ton mark:

1957—619,355 tons
1958—695,451 tons
1959—803,113 tons
1960—981,836 tons
1961—1,075,000 tons (app.)

In 1938, before the start of the shoal fishing industry, landings were 64,306 tons; ten years later they had reached 186,740 tons. In 1948 the South West African catch was 9,130 tons.

● Behind this nearly 4,000 per cent increase in the South West African catch in only 13 years is a really remarkable fishing enterprise, whose methods of operation could be considered unique in an industry which has to find and catch its raw material. Boats operating from the six Walvis Bay factories tend to be smaller—at 60 to 65′ in length—than the 65 to 72′ boats now being built for the Cape fleets, but they travel shorter distances into usually calmer waters for their fish. The average round trip lasts eight to nine hours, but may last less than four or five hours, and the average catch is kept down to about 40 tons a trip. To conserve the resource, each factory is restricted to a yearly quota of 62,500 tons and may operate if it wishes throughout the year.

The effect of this quota system is that boat and factory capacity is much higher than the intake and so production is planned and the plants work to a careful schedule. The usual operating period is from March-April rising to a peak in June-July when the pilchards are in top condition and tailing off to September-October. Each boatowner, who is given what is called a "site" by the factory he serves, is allocated a total yearly catch according to the tonnage of his boat; and, when the skipper goes to sea, he knows not only how much fish is required but the time he should bring it in.

The result of this scheduled intake is that almost all fish brought to Walvis Bay factories is in good canning condition, only hours out of the water, and canneries absorb as much as 35% and even up to 50% at times of the catch. Thus in 1960 which was the greatest canning year ever in the South West African industry, the larger canneries each turned out a million or more cases; they could pack 300 tons of fish into 18,000 cases in a day; and at times could average 1,000 cases an hour. To meet demand, the can making factory set up in Walvis Bay to supply the canneries made 300,000,000 cans in 1960.

● With canning so important to these factories, it is not surprising to find that they operate some of the largest and best-equipped canneries in Southern Africa, and fishing men from other countries who have visited them say they compare with the largest and best plants to be found in any other fishery in the world. Not only are they laid out for a high rate and top standard of production, but they also use some of the most advanced machinery yet developed for this type of work.

Each of the factories is very highly mechanized. Kimmerle or Yeomans pumps suck the fish from the holds and it is washed down water flumes of wood compound or fibreglass, and up an elevator to a wooden tower containing a batch weigher. Because the damp, dust, and salt of the desert coast causes vicious corrosion, the use of metal in the open is avoided where possible. From the batch weigher, all fish for the cannery goes through descaling reels, is again water flumed and then kept in tanks containing circulating brine before being sent through batteries of cutting-degutting tables or Neptune automatic packers—one factory alone has sixteen cutting-degutting lines; another operates nine Neptune packers.

The high rate of production in the relatively short period of five to six months puts a heavy strain on storage space and the factories presently have more than 450,000 sq. ft. of covered stores where cartons are stacked 12 to 16 to a pallet three tiers high. To handle these palletized cartons requires a fleet of 35 fork lift trucks and the average factory may use 10,000 or more wooden pallets.

● In the fish meal plants, as in the canneries, advanced processing methods are used. All factories concentrate their stickwater, using plants of Wiegand, Korting, Atlas or Limvann design, some of them made under license in South Africa. Some of the factories use drum dryers to produce a dried fish soluble, while others put the concentrate back into the press cake as it is conveyed to the dryer. The trend in Walvis Bay and the Cape factories is towards the use of the double-screw press, the indirect cooker, and the direct heat dryer working on the boiler flue gas system with automatic temperature control.

Ten years of consistently good fishing has given Walvis Bay fishermen and processors a confidence found in few other fisheries: they very seldom fail to obtain the fish they want and there are no signs that the raw material will diminish or disappear.

- During the past year Walvis Bay has also been a focal point of another venture not so well appreciated by the local industry. From their operations off the West African coast, large Soviet factory trawlers and their refrigerated transport ships have moved south and have been trawling off the coasts of South West Africa and Angola. The first of these 3,700-ton *Mayakowski*-class stern factory trawlers was sighted at the beginning of the year. Since then more than 15 Russian trawlers and supply ships have either appeared in Walvis Bay or have actually come into the port for supplies, and one of them, the 5,224 gross ton diesel-electric powered supply ship *Simferopol*, succeeded in running aground on the treacherous coast to be refloated five days later.

From the fragmentary information given out by their crews, these ships have had moderate success with their trawls and are also trying a little pilchard fishing with a 70 to 80′ long purse-seiner. Although it will not stop foreign exploitation of local waters, the industries in South and South West Africa are now pressing for an extension of the present 3-mile fishing limit to 12 miles. Such an extension would at least keep predator boats from the more sheltered waters of the coast and protect the source of two-thirds of the yearly catch.

- From an experimental start in 1960, tuna fishing off the Cape coast and 60 and more miles to sea is now growing into a full commercial venture. The first tuna exports, frozen in the round, were made this year to Italy and to North America and so far more than 200 tons have been caught and shipped. With the close of the Cape shoal fishing season, 15 to 20 pilchard boats, equipped with long-line haulers, have been put into tuna fishing and three large fishing concerns have formed a development company. Present estimates give the possible yearly catch at about 20,000 tons and there is talk of eventually building a few tuna clippers to carry this fishing a stage further.

While the commercial boats are busy, the research vessels which pioneered the long-line method in these waters are carrying on experimental operations, gathering data on the movements of the fish, the times when they are most frequent, and the best areas for finding and catching them.

The bottom trawling industry is now moving steadily from steam to motor trawlers. Although most of the larger boats are still coal-fired and powered by reciprocating steam engines, two 360-ton motor trawlers have been built, another is building in a British yard, and a fourth has been ordered from the steel shipyard in Cape Town. The same yard has also built its 11th trawler of a smaller type—72 ft. long—for a Cape Town company.

For the shoal and rock lobster fishing industries some 25 boats were built in 1961, including two steel-hulled vessels with large hold capacity. The largest wooden boat ever designed for pilchard fishing in Southern African waters is now on order. She will be 72 ft. long with 23 ft. beam and will be powered by a Caterpillar engine developing 380 continuous horsepower.

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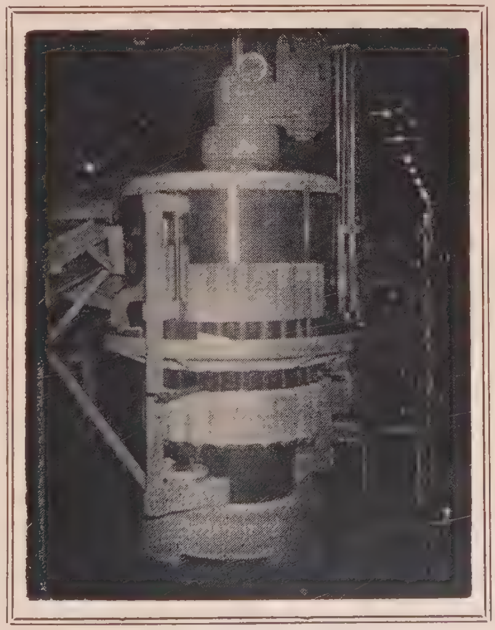

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GHANA

Three-Way Growth

- Ghana moved aggressively in 1961 to capitalize economically on the fishery resources of the Gulf of Guinea and the wider Equatorial Atlantic.

The development at once was in the inshore, coastal seas, where protein food was supplied for the Ghanian people from the teeming schools of small, nettable varieties; and—

Also it took to the establishment of port facilities for high seas operations of foreign fleets, which would contribute to the economy of Ghana through trade and employment in the storing, sorting, transshipping and perhaps processing of tuna and other pelagic species; and—

It is building at least six vessels of its own for extending Ghanian fishing into the rich resources of the high seas.

- Ghana at least two years ago moved vigorously toward the goal of developed fisheries by contracting with Star-Kist Foods, Inc., a leading United States tuna canner, for a study of the marine resources in the seas adjacent to the coast of Ghana. These investigations have continued since, and in 1961 came into fuller fruition in the development of ports and facilities for fishing.

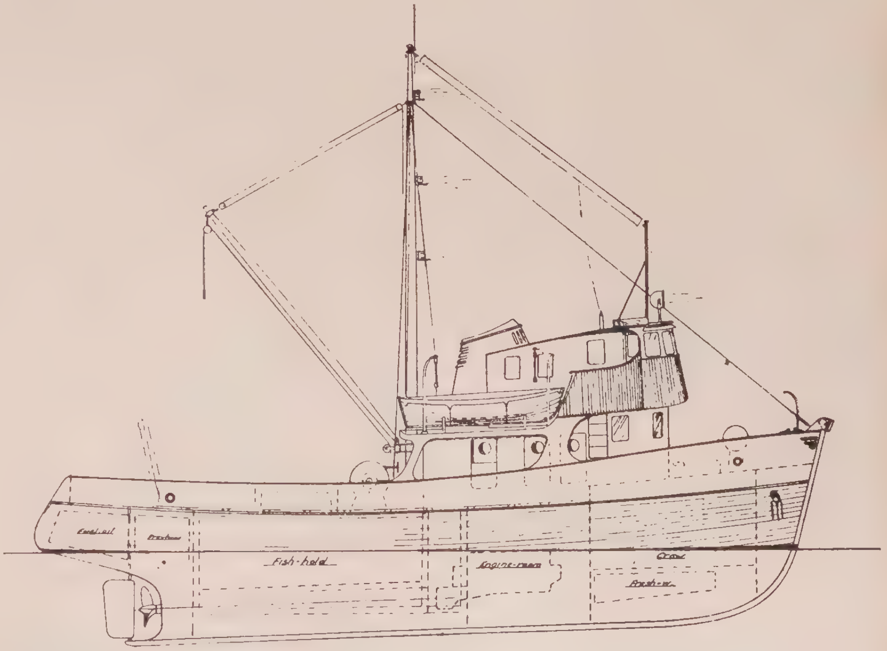
In its readiness to call upon the experience of other nations with developed fishing industries for study, advice and fiscal help, Ghana has not hesitated to move in a broad international pattern. Cooperation has been sought and secured from the government of the Soviet Union and from private enterprise in Japan, the United States and Great Britain.

Moreover, Ghana moved in 1961 to begin building an offshore fishing fleet of its own.

- Encouragement of its coastal fishermen, with better small boats, better nets and better markets, the latter through improved refrigeration and distribution facilities, was the first undertaking in Ghana's growth program for its fisheries. All this involved the necessity for catching as much fish as possible with the least immediate outlay. The amount of fishing nets purchased in 1961 was phenomenal. Most of them came from Japan, and most were made of cotton for economy in spite of its short life and other drawbacks under tropical conditions. The Japanese net manufacturers in 1961 report to *Pacific Fisherman* that Ghana had become the world's largest buyer of cotton fishing nets.

- Provision of port facilities for ocean fishing vessels early in the development was accorded priority, and in August, 1961, Ghana opened the new Tema fishing harbor solely for the use of fishing vessels. It can accommodate vessels from 130 to 180′ in length, and at time of opening the port had cold storage facilities for 1,000 metric tons of frozen fish. This capacity is to be increased by the construction of a new plant with capacity for 4,500 tons. This plant will be located near the fishing harbor, which also will be served by a shipyard capable of building wooden vessels to 70′ length and steel craft to 150′.

- As result of the tuna survey of the Gulf of Guinea by a team of experts from Star-Kist Foods, Inc., under that firm's contract with the Government of Ghana, the country entered into a contract in the United Kingdom for



Designed for Ghana, this 65′ 8″ combination trawler and purse seiner shows the profile prepared by Ocean Products A/S, Bergen, Norway, for the Government of Ghana, which expects to build 10 of these vessels in Ghana boatyards. Aarland & Son, Bergen, were the architects. The vessels are to be equipped with Norwegian hydraulic deck and refrigeration machinery, Kelvin 240-hp. engines, and will carry 10 men and the captain. Trips of 10 days are provided for in fuel and water capacity.

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the construction of six modern fishing vessels 130′ in length. These will include two trawlers and four high-seas tuna seiners. The latter are being equipped with the new type hydraulically operated tuna seine winches built by Marine Construction & Design Co., Seattle, Wash., U.S.A., and with the Puretic power blocks manufactured by the same company.

In addition to these six vessels building in Britain, Ghana in 1961 signed an agreement with the U.S.S.R. under which the Soviet Union will build 10 fishing vessels for Ghana over the next three years, with the first due to be delivered in 1962. Capacity of each of the vessels will be 185 tons of fish.

- Besides the 1961 completed fishing port at Tema, Ghana has under development additional facilities at Elmina.

Fish marketing is still a problem. This traditionally has depended on women fishmongers who deal directly with the fishermen and completely control the trade. A Food and Agriculture Organization (FAO) fish marketing expert has helped the government set up a pilot market at Takoradi where the market buys the fish from the fishermen for resale, at a negotiated price, to the women traders. In return, the traders who have been able to handle only small amounts of fish in the past are provided with ice and cold-storage facilities to help them extend their business.

Fish flour, long advocated by FAO experts for human consumption, has found a growing market in Ghana. A pilot fish-flour plant has been in operation for some time and now a plant is being built to produce it on a commercial scale. This fish flour, which can be kept sterile up to two years in waterproof bags and can be easily carried by bicycle, bullock, or even as a headload, will be sent into the interior of Ghana where there is a lack of protein and a large potential market for the fish flour.

- Japan's tuna fishing industry late in 1961 submitted to its government a proposal for the establishment of a "stock center" or cooperative cold storage facility in Ghana for the use of Japanese tuna fishing companies for the landing, sorting, freezing and shipping of frozen tuna to the outlets in Italy, Yugoslavia, the United States or Japan.

This would be the second facility of this sort on the Guinea coast of Africa, as in November, 1961, Nippon Suisan K.K. was reported to be constructing cold storage facilities at Tema specifically to handle the catch of its Atlantic trawler fleet, reported to total six trawlers.

SENEGAL

Disappointment at Dakar

● Senegal's 1960-61 tuna season was definitely disappointing and its key fishing port of Dakar suffered from the fact that it lies at the northwesterly extremity of the principal tuna-producing area. In the season which closed with April, 1961, cold weather and ocean currents moved the center of fishery further from Dakar than usual, bringing the ports of Sierra Leone and Liberia into strategic position.

The production for the season was only about 7,500 metric tons of tuna, against expectations of 13,500 tons, some of which had been firmly committed.

Much of the fish delivered at Dakar was caught as far away as the Ivory Coast. In general, the vessels utilized were too small to operate profitably so far from base; and when the season still had almost two months to run more than a third of the tuna fishing vessels returned to France.

Most of the tuna canned was shipped to France, where the price was high and guaranteed; but this left by small tonnage for export outside of France. In order to fulfill its commitments, the government of Senegal was obliged to purchase tuna for canning from sources other than the French fleet.

● Proponents of Dakar's being a tuna center claim that the trouble lies in the type of fishing fleet France sends to fish tuna. For the most part it is made up of small vessels of 15 tons capacity. These proponents argue that with more efficient, larger vessels, this occasional off-season necessity of travel to richer waters would not be very important and would obviate subsequent much higher freight rates from more distant ports for the finished product. Besides, they argue, Dakar's cooler and more favorable climate, its harbor facilities, freezing plant, and already existing canneries make it the more favorable port. Also, apparently the richest bait grounds lie between Sierra Leone and Dakar. So Dakar-based ships can catch bait simply en route to the fishing grounds.

However, opponents argue that all this simply obscures the point that if the fishing grounds are in the Abidjan vicinity, why go clear back up to Dakar every few days to land the catch. These feel that as soon as Abidjan (or any other suitable port on the Gulf of Guinea) is developed and capable of freezing and canning tuna, the importance of Dakar will diminish considerably.

● Senegal in 1961 adopted two laws concerning its territorial waters which may prove of considerable importance in the development of its domestic fishery.

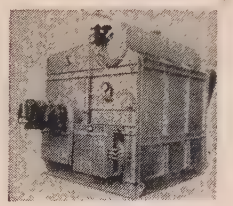
Only Senegalese fishermen may fish within territorial waters, which are defined as extending six nautical miles from the point of lowest low tide. An additional six miles is considered a "contiguous zone."

● There are seven tuna canning plants owned by French fishing interests on the Cape Verde peninsula in the vicinity of Dakar. They are said to be capable of canning 30,000 tons of landed tuna per season.

Virtually all of the 1960-61 landings of about 7,500 tons were canned locally.

Landings of tuna at Dakar in recent seasons, given in metric tons, are reported officially:

Season	*Total Landings*	*Packed Locally*
1960-61	7,500	7,500
1959-60	11,500	6,500
1958-59	7,500	4,500
1957-58	10,000	1,500
1956-57	8,000	1,000
1955-56	770	120



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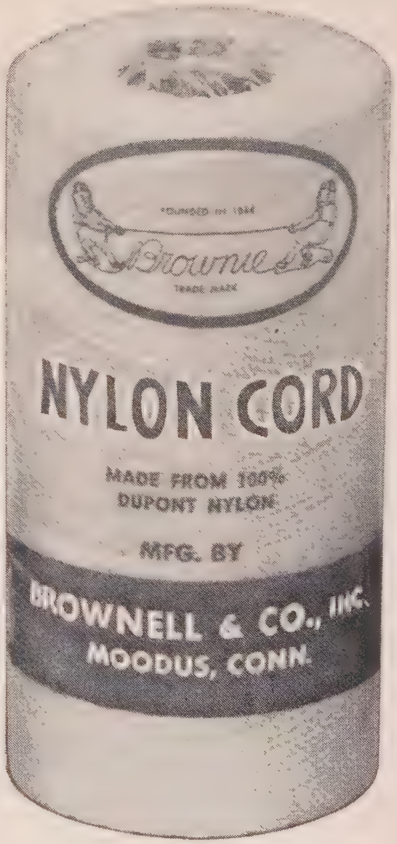

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SIERRA LEONE

Strategic Situation

- Promise of Sierra Leone's future in fisheries took on new brilliance in 1961 when Van Camp Sea Food Co., a leading factor in the world's tuna industry, was given a development certificate by the Sierra Leone government, enabling the company to establish a permanent base of operations at Freetown, the national capital.

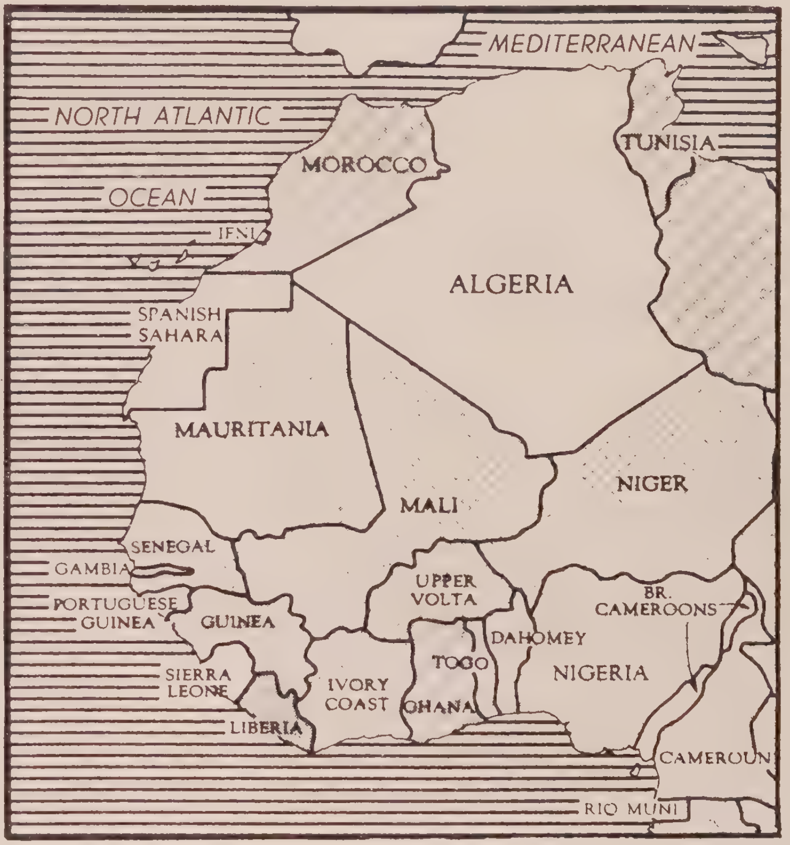
This is strategically located on the "Tuna Coast" of Africa, facing southwesterly, and sharing alike in the coastal fishery generally pursued by bait boat "clippers" of varying sizes; and also well situated with respect to the great Equatorial belt where the Japanese longliners discovered tuna all the way across the Atlantic.

The Van Camp company proposes to use Freetown as its tuna receiving center where catches from the offshore fisheries can be handled, sorted, graded and prepared for shipment on carriers to its packing plants.

The firm proposes to build a jetty in the Kissy Dockyard area to accommodate tuna fishing vessels, to construct brine-freezing tanks for holding tuna awaiting transshipment to Puerto Rico or the United States, and to install an ice manufacturing plant for icing the tuna catchers. Work on the first two projects was commenced in July and was to be completed by the end of the year. In addition to the above facilities, the firm has indicated that it would consider building a tuna cannery provided adequate tuna were available and a satisfactory source of water is found.

In addition to the work outlined above, which is estimated to cost U.S. $280,000, the firm has purchased the existing cold storage plant at Kissy.

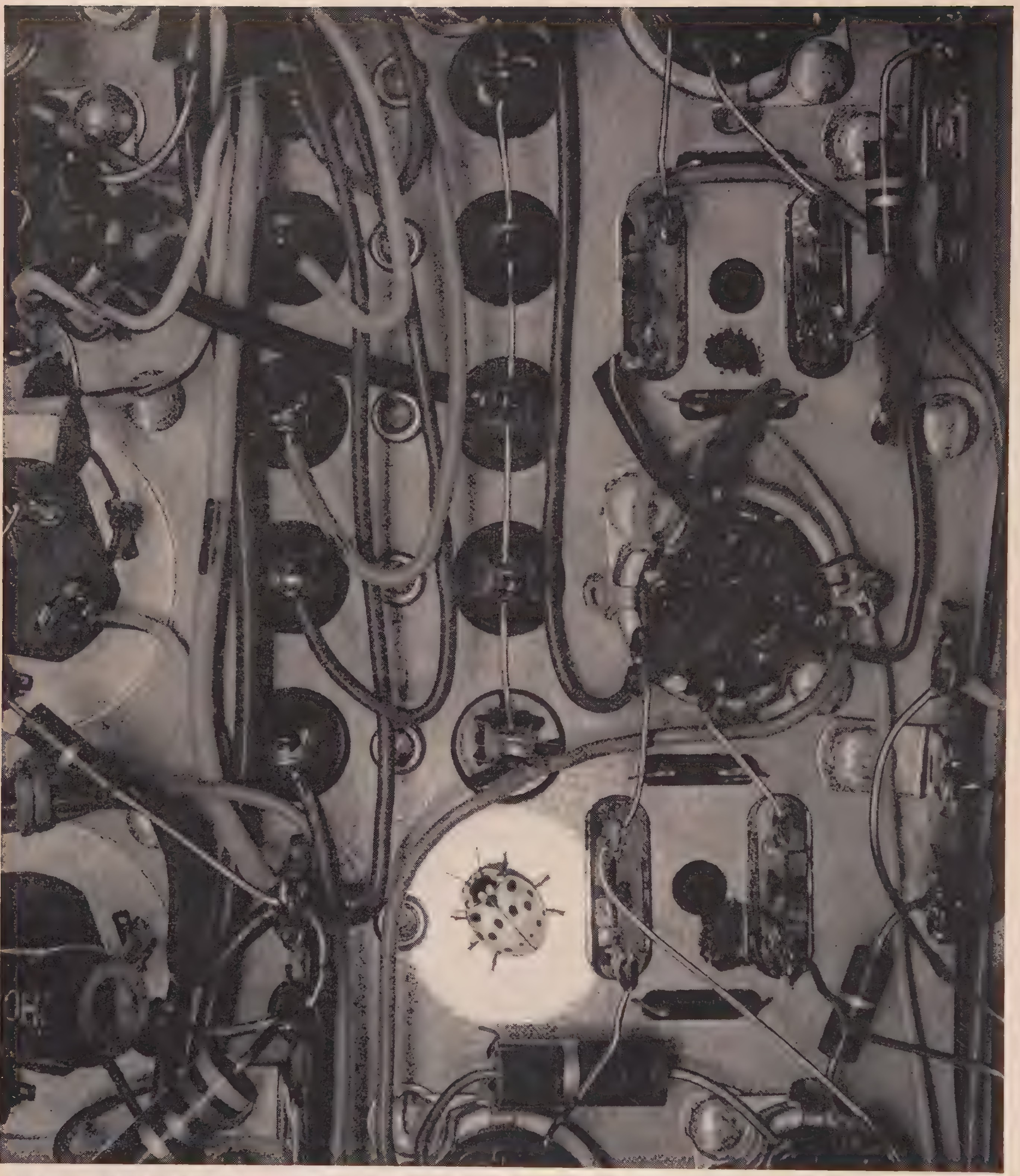
During 1960 the amount of tuna landed in Freetown was 2,340 metric tons, whereas landings for the first five months of 1961 total 2,768 tons. With a facility providing for larger handling capacities, it is believed that landings will increase.


Africa's "Tuna Coast"

- Growth possibilities for Sierra Leone's marine fisheries appear to lie primarily in offshore operations, with tuna as the principal species sought. Tuna schools appear from 70 to 80 miles off the coast; and Freetown in 1961 was second only to Dakar among tuna landing ports in all of Africa.

The Van Camp company tested the possibilities of purse seining tuna in the vicinity of Sierra Leone after the methods which have proven so successful in the eastern Pacific off the coast of Central and South America. However, the first year's results were reported disappointing and reliance on live bait and longline fishing appears certain to continue.

- Development of Sierra Leone's inshore fishing industry has made good progress in past years, although the supply of locally caught fish has not kept pace with demand, which has increased greatly with rising living standards (imports of fish products were valued at about U.S. $1,042,000 in 1960). About 25,000 metric tons of fish (primarily bonga and mullet, but including also skate, shark, ladyfish,



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whiting, gwangwa, sheephead, crocus, snapper, catfish and sole) were landed in 1960, a marked increase over the estimated landings of about 5,000 tons in 1945.

The bulk of the catch was brought in by unpowered bonga canoes, 3,000 to 3,500 of which now operate in Sierra Leone waters as compared with only 300 in the immediate postwar period. Techniques are largely primitive, with cast nets from the canoes and also some beach seines and hand lines in use.

- A small portion of the catch (estimated at 2,000 and 3,000 tons) was landed by about 10 African and European-owned motor trawlers which have been operating off the coast in recent years. Inshore fishing is protected by a law prohibiting these larger vessels from operating in the estuaries or within one mile of the coast. Outside this area the trawling grounds are restricted to inshore waters rarely deeper than 20 fathoms due to the existence of a permanent thermocline at this depth below which there is a sudden drop in the catch. While the trawling grounds are probably not yet fully exploited, there might be a danger that the increased introduction of powered vessels would result in overfishing.

The government is attempting to foster the growth of inshore fishing by encouraging the increased use of modern techniques and improvements in credit and marketing facilities. The Fisheries Development Research Unit, in addition to its scientific activities, operates a loan scheme to enable local fishermen to purchase small trawlers and modern gear. Fishing cooperatives are being encouraged and there are now seven such societies. The government is also considering various other measures to assist the fishing industry, including establishment of a vessel-building yard, construction of low-cost jetties, establishment of an outboard motor repair shop, and the improvement of cold-storage and ice-making facilities.

LIBERIA

Focal Point

- Liberia, most southwesterly of the African countries fronting on the great Gulf of Guinea and the north equatorial Atlantic, is a focal point for noteworthy fisheries development.

Several nations have enterprises based on this country, whose strategic position with respect to the tuna fisheries has attracted the attention of fishing interests and governments of Japan, Taiwan, Italy.

Principal single activity noted for Liberia is that of Taiyo Gyogyo K.K., the great Japanese fishing corporation, which has been operating a considerable fleet of trawlers out of African coast ports for several years.

This company is undertaking development of a large processing and storage facility at Monrovia, Liberia. It will have a daily freezing capacity for 20 tons of tuna in the form of whole fish, slabs and rounds; and will provide frozen fish storage capacity for 2,000 metric tons.

The plant is designed to serve tuna longliners as well as trawlers and to prepare their catches for the most advantageous markets. The plant is expected to be fully in operation during 1962, and to be manned largely by Liberians.

O.D.C. Company, an Italian firm, is understood to be associated with Taiyo in the undertaking.

Pending completion of the Monrovia base, Taiyo has maintained operations there with trawlers delivering fish to a refrigerated mothership for processing.

- With comprehensive facilities available at Monrovia, troubles of marketing Japan's equatorial Atlantic tuna catch are expected to be resolved. The plant will permit the discharge, sorting, examination, grading, evaluation and storage of frozen tuna; and the distribution of the various commodity grades to markets and at times which will be most productive. This will include the segregation and shipment to Japan of the items in best demand there.

Late in 1961 the Atlantic Ocean Tuna Committee of the Japan Frozen Foods Exporters Association set prices for frozen tuna suitable for the United States canning market at the following figures per ton, fob. West Africa: Albacore, $350; Yellowfin, gilled and gutted, $270; Yellowfin, dressed, $280.

Prices for these same items, fob. Panama Canal Zone, were $10 per ton less than quoted above.

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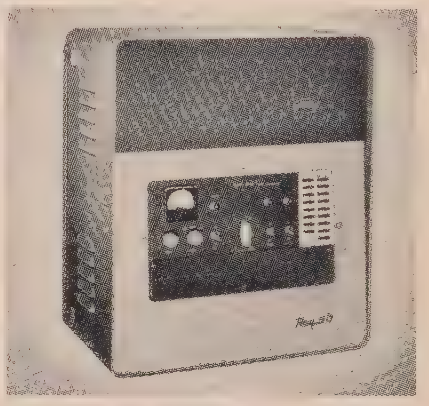

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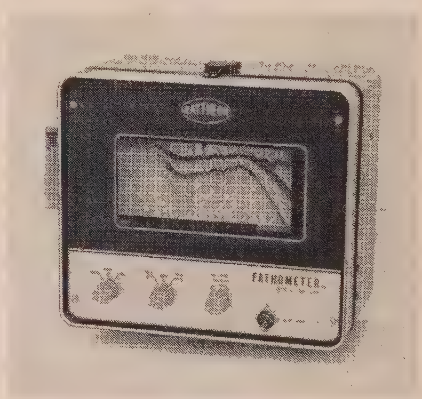

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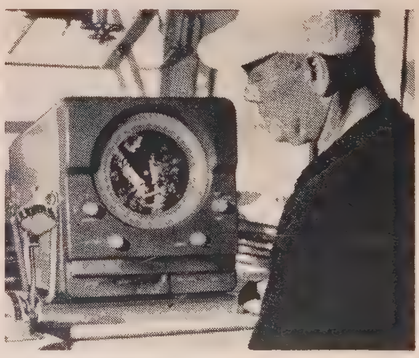

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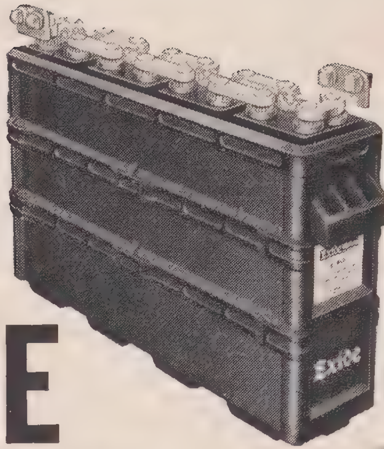

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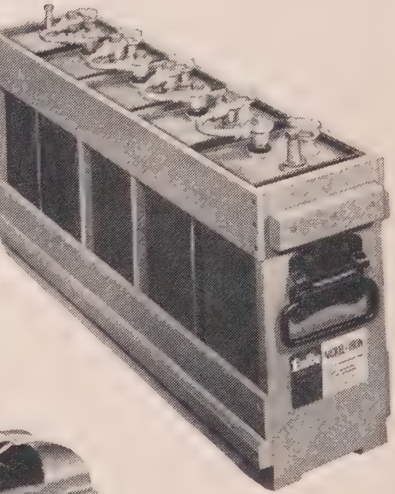

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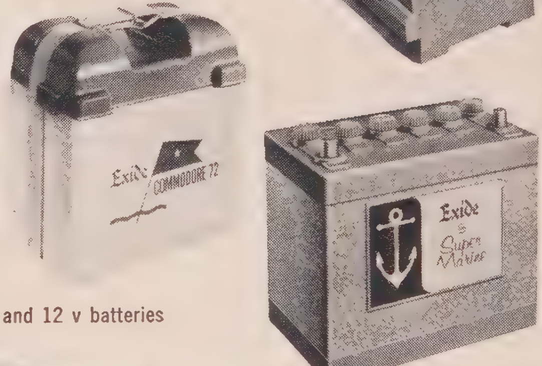

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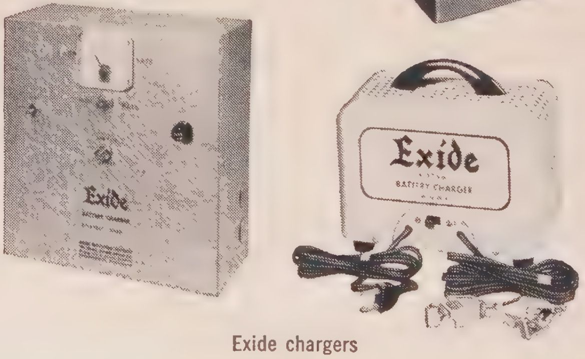

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WEST AFRICA

New Fishery Nations

● Africa's great westerly bulge from Nigeria west and north to Morocco in 1961 attracted a concentration of fishery development enterprises of extraordinary character.

They involved half a score of new countries, and some of the great world powers as well.

They were concerned with the tunas, schooling fish of sardines types, and trawled fish such as the sea bream, beloved of the Japanese.

Associated with the African countries were private enterprisers from the United States and Japan; fleet operators from France and Spain; government-sponsored explorations from Norway and Soviet Russia.

Beside the fleet activities at sea, there were plant and port developments ashore, some of them on an international assistance basis, and others deriving from private enterprise and the need for proper facilities for operations so far from home and conducted under tropical conditions.

● In 1961 the West African seas north of the equator and to the Strait of Gibraltar saw three distinct lines of fisheries development: (1) tuna fishing of various types and for several species pursued principally from Liberia to Senegal, but also to some extent further north; (2) local subsistence fishing by citizens of the coastal countries, generally working small craft for schooling fish in the vicinity of the coast and for the subsistence use of the local populations; (3) deep sea trawling, pursued primarily by long-range Japanese trawlers in the northerly segment between Senegal and the Strait of Gibraltar, and offshore toward the Cape Verde and Canary Islands.

● The tuna fishing was conducted by Spanish and French vessels which have fished along the African coast for tuna for a number of years; the Japanese longliners working the population found in a belt along the equator to westward, and including a large lobe extending up toward the coast of Sierra Leone and Liberia; and experimental fishing by American purse seiners of the large converted-clipper type, seeking to test the effectiveness of their distinctive gear under Atlantic conditions.

Joining the Spanish and French fishermen were a group of Norwegians, prospecting the promising new fishing under government auspices in an effort to find a fishery in which Norwegian vessels could be occupied gainfully during the off-seasons in their home waters.

While considerable success attended the tuna fishing operations conducted along proven lines and by experienced fishermen, the experimental or exploratory ventures generally were disappointing.

The Norwegian fleets, for all their long experience in northern seas, and the unquestioned hardiness of the crews, failed to make the gear with which they were experienced effective; and proved that they did not have the proper equipment to compete with the Japanese in longlining.

American efforts at tuna seining also were reported to have been disappointing. While there was little encouragement for the seiners in this initial year, it is anticipated that the gear will be tried again, perhaps by other companies.

Japanese longline tuna fishing in the Atlantic continued to be productive, but from mid-summer through the latter half of 1961 it was disappointing in the percentage of the catch composed by large Big-Eye tuna. This variety was present to an unsual extent, the fish were not generally suitable for canning, and the more desired Yellowfin and Albacore fell off in volume as the Big-Eye increased.

● Inshore coastal net fisheries for supplying the large protein food needs of the resident populations of the African coast were satisfactorily productive. Enormous quantities of netting were purchased, principally from Japan. It was composed almost altogether of cotton, as the purchasers put a premium on low price above all other considerations.

Fishing generally was conducted by small trawls and beach seines, with some vessel seining of several types. Production centered largely in Ghana, Nigeria and the Ivory Coast, although the other coastal states all showed interest in encouraging the expansions of their coastal fisheries as a means of improving the native diet.

● Offshore trawling by Japanese vessels off the African coast developed spectacularly in 1961 when experimental operations proved large resources of ocean fish particularly preferred by the Japanese domestic market.

Most notable species in this classification is the red sea bream, highly esteemed of the Japanese, who count it as the finest and most desired of all fish. In Japan the red sea bream is known as "tai," and this new source of the species proved of great economic importance.

While the most productive grounds for red sea bream were generally off the northwest coast, other species in abundance were found by the high seas trawlers over a wide area. This trade was pursued particularly by vessels of Nippon Suisan K.K. which had five very large trawlers working African waters. These vessels were the *Ibuki Maru,* 2,500 gross tons; *Amagi Maru,* 2,250 tons; *Asama Maru,* 1,000 tons; *Tenryu Maru,* 530 tons; and one smaller craft of about 380 tons.

Nippon Suisan's vessels were shipping their "tai" to Japan frozen, while they were delivering their catches of other species principally to Ghana and Greece. Late in 1961 the company was said to have contracted to deliver

500 metric tons of fish, mainly red snapper and mackerel, to Ghana; and to provide Greece with about 170 tons of snapper squid and shrimp monthly.

To facilitate sorting, packing, freezing and shipping of its trawl catches, Nippon Suisan K.K. was said at presstime to be preparing to construct base and refrigerated facilities at Las Palmas, Canary Islands. Even larger facilities are being planned by this company for Tema, Ghana.

Other companies known to have been active in the development of the Japanese trawling operations off Africa's northwest coast include Nampo Gyogyo K.K., which has been maintaining a one-boat operation with the *Tatsuta Maru*, 560 gross tons, based on Las Palmas, Canary Islands. This vessel is to be replaced after the middle of 1962 by a much larger craft of 2,530 tons.

Aoi Fishing Co., an affiliate of Nippon Reizo K. K. is planning to place a 600-ton trawler, *No. 1 Seiji Maru*, in this service during the second half of the present year. She will operate from a base at Las Palmas and will ship or deliver her catches to Gibraltar, Genoa and Livorno, Italy.

NIGERIA

- Nigeria's new-phase fisheries development has lagged somewhat behind that of some other countries fronting on the Gulf of Guinea, but moved ahead actively in 1961 with the determination of Taiyo Gyogyo K.K., generally recognized as the largest fishing company in the world, to participate with Nigerian government agencies in the construction of fishing base facilities at Lagos, Nigeria.

Associated with Taiyo in this enterprise is Kinoshita Industries. The Japanese interests will provide 30% of the capital with the 70% Nigerian share coming from the government and a Nigerian shipping and trading company.

The facilities at the base when completed will include a cold storage plant with capacity for 500 tons of frozen fish. This plant is to be available for use by Japanese fishing vessels of other companies active in the Nigerian area.

Taiyo was expected to have a pair of two-boat trawlers working out of Lagos by early 1962, and eventually is to have six trawlers of the 100-ton type working there. Annual production is expected to be about 6,000 tons of croaker, the principal species sought. A preliminary selling price of US$167 per metric ton has been agreed upon.

The Nigerian fishery development for the present seems to be based largely on trawling, in addition of course to inshore fishing by the resident population on a subsistence basis.

Whether commercial development of high seas fisheries for tuna can be expected by Nigeria is not altogether clear.

A "Grow Your Own" program is being sponsored by the Nigerian Government to improve the diet and health of the people. Included is a plan to cultivate fish in reservoirs and ponds to produce fresh fish on the spot and at reasonable prices. There are already 72 ponds and 8 reservoirs with 15 more reservoirs under construction. So far, fish are being harvested from 37 ponds and 8 reservoirs.

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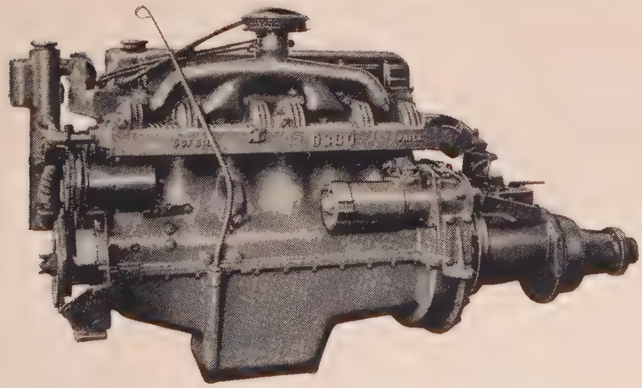

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CHILE

On the Eve of a Boom

• Chile, a nation possessing great riches in fish and shellfish, is now organizing its industries, and acquiring the boats, harbors and plants needed to make Chile a leader among the fishery nations of the Pacific. So rapid has been the progress of Chilean fishing, and so strong the push that is now being put behind fishery development, that Chile is expected to enjoy a fishery boom in 1962.

According to the Sociedad Nacional de Pesca, or National Fisheries Society, Chile is now landing fish at the rate of 300,000 tons a year, an increase of 31% over the 1959 rate. And, says the Sociedad Nacional de Pesca, the rate is rising.

At Iquique, which is expected to become one of Chile's greatest fisheries ports, no less than 10 fish processing plants are in operation or in the final stages of building. Most of these are fishmeal plants, but among them there are also canneries and freezing plants for edible fish products.

At Arica, which is rivaling Iquique in growth and promise, there are now three plants and a fleet of 20 modern boats, but that port expects to get its export volume up to 50,000 tons of anchovy meal a year.

Iquique and Arica are in the northern zone of the republic, near Peru, and the marine resources of that part of Chile are like those of Peru—in great part anchoveta, which is processed into fish meal and oil; and including tuna, swordfish and bonito.

• In the central zone the fishery product is used principally for human food. This section of the Chilean coastline leads in the production of hake, shrimp and lobster—largely a bottom fishery. Firms operating in the central zone are diversifying their production, going into frozen, fresh and canned products as well as meal and oil. A sizable industry in dried, dehydrated, smoked and salted fish is also in the making in the central zone.

In the south, centering in Puerto Montt and Aisen, a new industry is in the making: the freezing and canning of the centolla or Chilean crab, a variety of sea food that earns the praise of every traveler lucky enough to eat a sample of it in Chile. According to the Sociedad Nacional de Pesca, this industry is at the moment on a small scale, but the product is so well received everywhere that its future is brilliant.

In all, Chile contains about 100 fishery firms of various kinds, served by more than 11,000 independent fishermen.

Government-Industry Partnership

• While the entire Chilean fishery industry is concerned largely with exporting its products so as to earn dollar credits, strong efforts are also being made to promote domestic consumption of fish and sea foods, on the old familiar double ground that fish is not only a domestic product and eating it helps the nation, but that it also helps those who eat it to a more balanced diet, richer in the more healthful proteins and oils found in fish.

The chief center of domestic consumption of fish in Chile is naturally the largest city and capital, Santiago, which is in the central zone. Here a joint effort by industry and government is being made to boost consumption of domestic fish. The push is being led by the Comision Nacional de Fomento al Consumo Pesquero (National Committee for Promotion of Fish Consumption). Contributing to this committee is the government, through the Ministry of Agriculture and the Corporacion de Fomento or National Development Corporation (Corfo), and the Sociedad Nacional de Pesca, which is an organization of processors.

The government-industry effort has brought results, as the figures show. Consumption of fish and shellfish in the Santiago market from August, 1960, to July, 1961, was 15,773 tons, compared to 12,745 for the previous August-July period—an increase of 3,028 tons, or 25%.

Consumption of fish in the Santiago market during the 12-months periods ending July 31 in the past two years, by principal classifications, in tons, show:

Species	1959-60	1960-61
Hake	9,893	11,283
Sawfish	242	545
Other fish	1,488	2,018
TOTAL FISH	11,623	13,846
Shellfish	1,122	1,927
GRAND TOTAL	12,745	15,773

A national program for the formation of fishermen's cooperatives is also under way with official sanction in Chile. The cooperatives are associations of independent fishermen, and the government aids them by providing modern mechanical fishing gear, new vessels and other practical aids to fishing.

Sub-Arctic Crabbing

• One branch of the Chilean fishing industry that shows promise is the crab (centolla) fishery in the far south. The Chilean crabs are said to resemble somewhat the King crab of the subarctic North Pacific and Bering Sea, and the conditions under which they are caught in the sub-antarctic are about as rugged as those in the north. The product is excellent, and consumer acceptance can be taken for granted for almost any quantity produced.

According to a report by Ole J. Heggen to the U.S. Bureau of Commercial Fisheries in 1961, there are three centolla plants in Provenir and Rosario, about 15 miles apart. The Bonacic y Cia. plant, which in 1957-58 produced 600 cases, had increased its output to 1,120 cases in 1959-60. About

80 people, fishermen included, worked in the plant.

The crabs are caught from open boats, without deck, cabin or any protection against the weather, using mostly cotton nets, with some nylon coming in. The men work in teams of four, three fishing and one shore-side to maintain the camp and mend nets. The crews live in four-man self-contained camps. The average catch per boat last season was 15,020 crabs, which brought the fisherman an average return of 375,50 escudos (about U.S. $375.00) for the two or three-month season, November through December or January, which is the Tierra del Fuego summer season.

At the cannery, the crabs, trucked in from the fishing camps, are scrubbed, eviscerated and cooked in steam for about 18 minutes, then the meat is picked by women workers and hand-packed in 400-gram (454 grams equal 1 lb.) round cans. Loosely covered, the cans are preheated, then sealed and retorted.

Despite low production and other serious handicaps, the Chilean crab industry is growing, as witness the Bonacic plant which is boosting its capacity to 3,000 cases a season. The future is promising, first because the product is first-class in quality and, second, because the port of Porvenir is on a direct steamer route to the United Kingdom and Europe.

Industry Organizations

● Measures for industrial development in Chile are carried out by the Corporacion de Fomento de la Produccion, a government body which concerns itself with all industry, including fisheries. The fisheries regulatory body is the Departmento de Pesca y Caza or Fish and Game Department, of the Ministry of Agriculture. The Sociedad Nacional de Pesca, representing the processors, is headed by Sr. Fernando Maira Castellon as president and Sr. Julio Luna Munoz as manager.

Although Chile is striving to build a diversified fisheries industry, greatest interest is drawn to fish meal and oil. Private interests and government seem determined to make Chile a factor in the world fish meal economy, following the example of neighbor Peru. A list of Chilean fish meal and oil plants compiled by the U.S. fisheries attache for Latin America in December, 1960, shows four plants in Arica, five in Iquique, one each in Mejillones, Tocopilla and Quintero, four in Antofagasta, two in Coquimbo, Valparaiso, and San Antonio, and no less than 18 in Talcahuano. Capacity of these plants ranges from 25 metric tons of raw fish per hour down to two. The biggest plants are those of Eperva, S.A., said to be Chile's largest fishery firm, and Industria Pasquera Indo, Ltd., both using Danish-made equipment, both located in Arica and both showing a capacity of 25 tons per hour of raw fish.

In its annual report for 1960, Eperva told an encouraging story of progress, describing construction of an additional line in its Arica plant, plus an entire new plant at Iquique, eight new 80 to 85-ton boats, net maintenance facilities, employee housing and incentive programs. The second line at Arica, it was said, would raise the capacity of that facility to 600 to 650 tons of fresh fish a day.

This sort of expansion of private fishery industries is being encouraged in a practical way by the government, which is aiding development through programs of loans, technical aid and tax allowances of various sorts.

Foreign Participation

● The current year 1962 is expected to see substantial participation by qualified and capable foreign enterprises with Chilean capital in development of the latest fisheries resources of Chile.

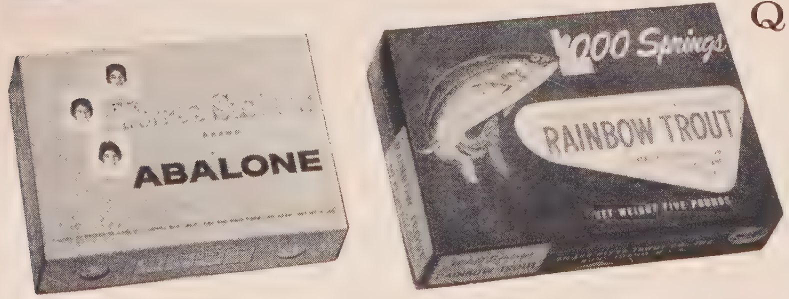
Early in the year two such projects had specifically been announced. Canadian and United States participation is involved in a venture which will see J. H. Todd & Sons, Ltd., of Vancouver, B. C., joining with the Marine Construction & Design Co. of Seattle and Alimentos Marinas of Santiago in the development of a fish meal plant and cannery at Iquique.

Principals in the Todd company are British Columbia Packers, Ltd., and The Canadian Fishing Co., Ltd., the two largest fishing corporations in the British Commonwealth.

South African investment in Chile by the Ovenstone interests, outstanding canners and manufacturers of fish meal and oil in South Africa and Southwest Africa, has been announced in Capetown. The Chilean interest involves Cia. Industrial, an important manufacturing and whaling corporation.

The plant, which also may be matched by one in Peru, will be served by a fleet of nine modern purse seiners which are to be built by the Astilleros Iquique Division of Marco Chilena S.A.

The construction probably will be in the hands of a South African engineering and contracting firm, and about half of the machinery required will be of African manufacture. The remainder will be purchased from Danish and Norwegian manufacturers.



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PERU

World Leader in Fish Meal

- Great achievement of the Peruvian fishing industry in 1961 was the successful establishment of the Concocio Piscaro del Peru, S.A. This non-profit corporation represents as sales agents producers accounting for about 94% of the tremendous fish meal production which has placed Peru in undisputed first place in the world market.

At the beginning of 1961 the world market had fallen to disastrous levels which not only threatened ruin to the Peruvian industry but which also threatened the financial security and well-being of virtually every competing industry throughout the world. Unrestrained growth, speculation and chaotic marketing had led to large financial loss by importers, dealers and merchants and corresponding tremendous profits to speculators. On February 15, 1961, the Concocio started operations with Manuel Elguera as president; Luis Banchero as chairman of the executive committee of seven members, namely, Epifanio Azorfa, George Gligo, Rafael Grana, Carl A. Hedreen, Angel Magnifico, Carlos Otero Lora and Juan Jose Suelves.

The Concocio engaged Dr. Roque Romero, a well-known Lima accountant and attorney, as general manager. Offices occupying the fifth and sixth floors of the Edificio Sud America on Lima's Plaza San Martin were engaged and a competent staff of accountants, traffic clerks and shipping experts were engaged—and the Concocio was on its way. Conditions of sales satisfactory to both buyer and seller were established and the slow process of introducing orderly marketing began.

Owing to the fact that substantial tonnages had been sold by members of the industry prior to the organization of the Concocio, for a time there was a dual market. The speculators endeavored to continue their activities, but one by one the marketing problems were solved and the buyers came to recognize that the Concocio was a going concern. It was realized that the Concocio would have to send a delegation to visit the principal buyers in each of the world markets, and in May, 1961, Luis Banchero and Carlos Otero Lora were sent as a delegation to Europe and the United States. Their visit and explanation of the objectives and purpose of the Concocio resulted in building up a relationship of confidence with the buvers and end users in each of the markets visited.

Again in September, 1961, the delegation visited Europe and it is planned that frequent visits will be made in the future. The officers and directors of the Concocio serve without pay and have generously devoted long hours of work and weeks of travel which have accounted for, in large part, the successful marketing of Peruvian fish meal valued in excess of U.S. $50,000,000 in the first 10 months of operation. It is anticipated that the Concocio sales in 1962 will approximate U.S. $100,000,000, which places it in the category of the largest company in Peru in terms of sales, and certainly among the leaders of cooperative sales companies anywhere in the world.

The Concocio is governed by a board of directors of 30 members meeting monthly. The day-to-day work of the Concocio is carried out by the executive committee, which holds daily meetings in which buying proposals are received from all parts of the world and are discussed and acted upon. A constant flow of reports is received from Concocio agents abroad via cable and direct Telex communication.

- Quite independently from the Concocio, the National Fishing Society, made up of all producers of fishery products in Peru, has established and operates a quota system by which allocations are made to individual producers of export quotas. The Concocio assigns shipments to its individual members against the tonnages offered by the members which must be within their export quota as established by the National Fishing Society. The individual member producer is responsible for the actual marking and loading of the goods as well as the preparation of the shipping documents which in turn are handed to the Concocio. Buyers' letters of credit are opened in the name of the Concocio, which receives the funds and distributes them among its stockholders. Following an initial distribution small differences are adjusted by subsequent liquidations. The producer remains individually responsible for correct weights and analyses at destination. The administrative ability of Dr. Romero has resulted in growing efficiency as monthly shipments have grown rapidly from 15,000 tons to in excess of 100,000 tons per month.

- Market stability and the confidence of the buyers has demonstrated that world consumption requirements were considerably underestimated. The growing Peruvian production has found a place in the markets of the world as demand, particularly in West Germany and in the United States, has notably increased. In part, production failures in other countries have resulted in Peruvian fish meal moving in to fill up the gap.

The Concocio Piscaro del Peru maintains close working relationship with the fish meal exporters organization with headquarters in Paris under the management of Jacques Schwarz. This organization whose membership is composed of the principal fish meal exporting countries maintains complete statistics covering production, consumption and imports on the world market with a view to making it possible for their members to coordinate supply and demand.

- Following the recovery of fish meal in the international markets upward adjustments in costs became necessary as a return to more normal conditions was obtained. The principal factors in higher costs included higher prices for fish, higher prices for labor, and particularly, higher export taxes. The competition which formerly existed between Peruvian producers in an effort to dispose of their production is now directed toward more positive practices. The competition today is centered around the two principal points of reducing costs wherever possible and improving quality.

Nineteen sixty-one saw the establishment of several new plants equipped to produce steam-dried fish meal and other plants were installed to produce full meal. The Concocio through its technical committee formed by Enrique Del Solar and Carl Hedreen is directly concerned with measures designed to improve the general quality of Peruvian meal. The Peruvian government has also taken steps to reduce the dryer temperatures, permitting a maximum of 500 degrees Centigrade at the entrance to the dryer. While this move is designed primarily to assist in reducing the odor problem, it is expected that the quality of the meal will be improved as well.

- Concurrently with the growth in production of fish meal the by-product of fish oil has also increased substantially. Production is estimated to have reached approximately 100,000 metric tons in 1961. The bulk of the Peruvian fish oil is sold as crude to local refiners. The marketing, therefore, is in the hands of the refiners who sell a standardized so-called semi-refined fish oil. Today the appearance on the world market of large quantities of Peruvian fish oil has resulted in a marked decline in price, since the market cost and freight from European ports has dropped from $165 per metric ton to an approximate $150 per metric ton at the close of 1961.

- *Canned Fish.* The year 1961 has seen few changes in the canned bonito picture. Higher labor costs and higher taxes have added to the problems facing the canners. Production remained approximately equal to 1960. The tariff increase on canned tuna in Western Germany of 5% effective January 1, 1962, which buyers felt should be absorbed by Peruvian canners, has complicated matters in this promising European market.

- *Frozen Fish.* Peruvian exports of frozen shrimp and swordfish principally to the American market continued unchanged with production running slightly better than 1960. The most important development was the sale of Frederifico's Paita by the Westgate interests of San Diego to Cesar Vallarino. This sale which comprised the former Westgate fleet of two transport vessels, the *Puerta del Sol* and the refrigerated vessel *Westgate* in addition to two cold storage plants located in the Port of Paita involved several million dollars. In addition, Mr. Vallarino is planning a fleet of 18 refrigerated purse seiners currently being completed in the Port of Callao which will add very substantially to the production of frozen tuna and Skipjack.

- *Fishing.* Anchovy catch during the first six months of 1961 exceeded 2,300,000 metric tons. As of June 30 over 1,000 purse seiners were in service with an estimated 200 purse seiners having been added to the fleet during the calendar year 1961. As the year closed an estimated 70 to 80 purse seiners were under construction, some of which were destined for Chile. One innovation in the Peruvian fishery has been purse seiners equipped with pumps which brail directly from the net into the hatch, saving considerable time over the standard method of brailing.

Among the collateral industries considerable progress has been made by local manufacturers of reduction plant equipment. Presses, dryers, cookers, cyclones, are all manufactured in Peru and in 1962 one manufacturer has plans to begin construction of centrifuges. The Japanese net manufacturer Momoi has announced formation of Momoi Peruana S. A. in conjunction with Peruvian interests and expect to be in production on synthetic nets by the middle of 1962. B. F. Goodrich Co. during 1961 began the manufacture in Peru of their Spongex floats. Both jute and paper sacks are manufactured in Peru and announcement has been made of a rope factory scheduled for first production during 1962.

- *General.* In total tonnage of fish landed Peru may have moved into third position in the world, led only by Japan and Red China. The year 1961 has seen continued production growth and with market organization the producer at year end was in a considerably more healthy financial state than a year ago. The Concocio has made very substantial sales for delivery on the world market during 1962.

At the same time the Peruvian government and the industry are both engaged in scientific research. Under the auspices of the Food & Agricultural organization of the United Nations a staff of scientists and economists are studying the anchovy resources and, although it is too early to attempt any forecast of the future, there is no evidence to date of overfishing. Under the auspices of the fishing industry the Peruvian Agricultural University of LaMolina is conducting research programs in connection with Peruvian fish meal. Some study and investigation is being made of the possible use of anchovy in connection with fish flour for human consumption.

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ECUADOR

Under-Exploited Riches

- Ecuador's 1960 fishery production, reduced to fresh-fish terms, rose to 44,295 tons, an increase of 23.2% over the previous year's total, according to an excellent review of the industry contained in the Annual Report of the Central Bank of Ecuador (Banco Central del Ecuador), issued under direction of the general manager, Sr. Nicolas Fuentes Avellan.

While this represents an overall gain, Ecuador's fishery progress has been unsteady. The industry still represents a great opportunity for development and improvement, with rich rewards indicated by the success of some branches of the fishery industry, for example, tuna, which has risen in production, contributed more money to Ecuador's economy, improved its plant and enlarged its foreign markets.

- In 1960 tuna was Ecuador's second fishery product, if you group miscellaneous fresh species sold entirely to the domestic market as one product. Among single commercial species, tuna and bonito was 'way ahead, with a total production of 12,000 tons, while the second group, crustaceans (including shrimp), totaled only 900 tons. In money value, tuna and bonito yielded 31,680,000 sucres (US $1,942,367. 16.31 sucres equal $1).

The most encouraging feature of the tuna year was the increase in exportation of *canned* tuna from Ecuador. This figure rose by 17.8% over 1959, totaling 968 tons. Frozen tuna exports, on the other hand, dropped from 4,648 metric tons in 1959 to 3,381 m.t. in 1960. But Ecuador's loss in the U.S. market was not as great as that suffered by its competitors, Japan and Peru.

Another encouraging note was the increase of domestic consumption of canned tuna in Ecuador itself. The total in actual cases sold to the home market was 52,342, as compared with 33,259 actual cases in 1959. Since the home market consumes almost entirely cases of 48½s and 48 1-lb. cans, the figures mean something, although they are not as revealing as if they were converted to common terms, either 48 halves or 48 1-lb. cans. In actual cases, the exported total of canned tuna shows a drop in 1960 under 1959, but this means nothing, because so much more tuna was exported in four-pound cans this year than last.

- The miscellaneous fresh-fish catch of 35,300 tons was brought in by some 10,000 independent fishermen and earned them a return of 122,300,000 sucres, or about $7,500,000 for an average return for the year 1960 of $750 per fisherman. On the other hand, the industrial or cannery catch (which was mostly tuna with a smaller amount of shrimp) was taken by approximately 1,000 fishermen and had an estimated value of 46,100,000 sucres, or $2,827,100 for an average of $2,827.

During 1960 Ecuador's leading tuna cannery, a subsidiary of Van Camp Sea Food Co., installed new brine refrigerating facilities, added several new vessels to its fleet, and employed a greater number of Ecuadorean workers, to the general benefit of the nation. Equally important, it turned out a product that is not only bringing in revenue from export sales, but is meeting better acceptance at home and providing Ecuadoreans with a wholesome and delicious food at a price they can afford to pay.

ECUADOR'S GROWTH IN FISH PRODUCTS VALUATION

Year	Exports US$	Home Use US$
1955	670,694	1,858,308
1956	1,390,865	3,402,023
1957	2,789,516	4,285,034
1958	3,461,250	5,162,784
1959	3,849,736	5,818,516
1960	2,824,280	6,659,585

Nevertheless, the Bank report points out that there is room for improvement in the form of bigger vessels, with more modern purse-seining equipment and refrigeration that will enable them to range farther out to sea for fish. Also needed are better shore installations with increased capacity for production and for refrigerated storage.

- Following two years of overdevelopment of the shrimp fleet, a number of marginal shrimp operations went by the board in 1960. The total number of firms in the shrimp business at the end of 1958 was 11; by the end of 1960 the number had shrunk to five.

Total shrimp production for 1960 was about the same as 1959, 2,800

ECUADOR'S FISHERY PRODUCT VALUES

Year	Fresh Fish US$	Tuna and Bonito US$	Shrimp and Lobsters US$	Molluscs US$	TOTAL US$
1955	779,767	410,498	841,754	487,983	2,529,002
1956	1,314,592	549,479	1,960,209	668,608	4,792,888
1957	2,205,286	1,917,045	2,853,464	99,755	7,075,550
1958	2,529,123	2,313,244	3,759,595	22,072	8,624,034
1959	3,126,915	2,603,249	3,891,858	107,235	9,668,252
1960	4,451,226	2,823,667	1,951,480	257,492	9,483,865

tons, of which 1,900 tons were exported and 900 consumed in Ecuador. Dollar returns from the exports, while lower than in 1959, were not as much lower as was the quantity exported; so the price of Ecuadorean shrimp abroad (especially in the U.S.) was better in '60 than in '59.

Ecuadorean shrimp interests were worried by the push by American producers to establish import quotas or higher import duties on foreign shrimp. When Congressional hearings seemed to threaten no immediate action on the matter, the Ecuadorean industry perked up somewhat and some firms are undertaking to build new shrimp boats and explore new banks. For the first time in its history, Ecuador is building in its own shipyards steel vessels for the shrimp fishery.

Another factor for the Ecuadorean shrimp industry to consider is its competition from other shrimp-exporting nations. Here some encouragement is felt from the fact that all the old-established shrimp exporters (except Mexico) are producing less shrimp for export to the U.S., while countries new in the business, or underexploited like Ecuador, are doing better in production.

- Lobster tails, a product that seems to be enjoying much greater demand in world markets than can be supplied by the producing nations, enjoyed a promising growth in Ecuador, starting from virtually scratch.

Exports in 1959 were only one ton, an all-time low, but in 1960 they jumped to 36 tons as the U.S. market opened up. At prices ranging from U.S. $1.10 per lb. for 4-6-oz. tails to U.S. $1.50 per lb. for 12-16-oz., the lobster tail industry is one that could become an important factor in Ecuador's fisheries.

In fish meal and oil production, Ecuador lagged, producing no more than is absorbed by the country's own margarine makers and other domestic users. Source of raw material is exclusively cannery waste.

- In April, 1961, Ecuador became the fourth nation to join the Inter-American Tropical Tuna Commission, the other members being Costa Rica, Panama and the U.S. Both the nation and the Pacific fishery community gained from Ecuador's adhesion, for now the Commission can make full use of Ecuador's facilities for improving tuna research, and the strength of one more Pacific maritime nation is added to whatever measures the governments may agree on with regard to tuna conservation. Ecuador, for her part, gains in a stronger participation by the Commission in programs of research that will speed up the development of her tuna industry.

A number of fishery studies are in progress in Ecuador at present, one of the most significant being a four-year project for creating a fishery institute in the Republic. This project is being financed jointly by Ecuador and the Special Fund of the U. N., working through the U. N. Food and Agriculture Administration as the executive agency. Collaborating with this project, the Tuna Commission has appointed Dr. Malvern Gilmartin, Roger Kearns and a staff to take part. Studies are now being made of the oceanography and ecology of the Gulf of Guayaquil, probably the most important fishery region in Ecuadorean waters, not only because of its marine life but because its nearness to Ecuador's biggest port make its marine harvests very handy to an efficient processing center and shipping point.

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MEXICO

Source of Shrimp

- Mexico's most important fishery product, by far, is shrimp. And 1961 and 1960 were both good shrimp years for Mexico, judging by exports to the United States, which is by far Mexico's best customer for shrimp.

Bureau of Commercial Fisheries statistics show that in the first seven months of 1961 Mexico sold 37,278,000 lbs. (16,944.6 metric tons) of shrimp to the U. S., a healthy increase over the 36,622,000 lbs. sold in 1960. The U. S., world's leading shrimp-consuming nation, buys more than half its supply from Mexico.

Production figures for most Mexican fishery products are at this writing not available, but they can be judged, at least for purposes of comparison, by the export figures. These, according to the Bureau of Commercial Fisheries, show that Mexico in 1960 broke her shrimp record for the third straight year.

Exports of fresh and frozen shrimp for 1960 amounted to 32,145.8 metric tons (one metric ton equals 2200 lbs.), 8% over the 1959 total of 2,924.8 metric tons. Again showing their fondness for Mexico's shrimp, the people of the U. S. took 32,117.6 metric tons of Mexico's exported total, leaving a mere 28.2 tons to be divided among France, Canada and Germany in the order named.

Mexico also exported an estimated 188.8 metric tons of canned shrimp to the U. S. and Canada, and 33 tons of dried shrimp, almost all to the U. S.

Value Down? Or Up?

- Because of a Mexican government revaluation of export shrimp, the paper value of the bigger Mexican 1960 export crop was lower than that for 1959, being set at US$34,105,700, as compared with US$38,879,200 for the 1959 export total.

However, in its official report, the U. S. Bureau of Commercial Fisheries points out that a more realistic estimate of the value of Mexican fresh and frozen shrimp exported to the U. S. would be $40,700,000, taking into account the actual prices paid for shrimp, and other factors bearing on value.

Shrimp is fished on both coasts of Mexico, the Pacific and the Gulf of Mexico. A good preponderance of shrimp landings, however, are made on the Pacific. In 1960, last full year for which figures are available at this writing, Pacific coast landings were 55,059.4 metric tons, Gulf landings 20,893.7, adding up to a total of 75,953.1 metric tons. The Pacific coast, by these figures, accounted for 72% of the total. In 1959, the Pacific Coast state of Sinaloa (in which the port of Mazatlan is located) led the nation with 18,613.3 metric tons, followed by the Gulf state of Campeche with 13,701.6. But the Pacific state of Sonora (Guaymas) was a close third with 13,207.9.

Of the 37,278,000 lbs. of shrimp imported into the U. S. from Mexico in the first seven months of 1961, 24,222,000 lbs. came in through the Arizona customs district, gateway for Guaymas and Mazatlan shrimp.

- Shrimp fishermen of Guaymas, on the Gulf of California, looked forward with optimism to the season of 1961-62, which opened officially in September with the lifting of the closed season ban lowered in July. During the first nine days of the season, 34,000 lbs. were reported to have been landed at Guaymas by nine vessels.

The 1960-61 season was a fairly profitable one in spite of below-normal prices. The Guaymas fleet landed 15,600,000 lbs. of shrimp, as compared with 12,000,000 for the previous season. According to reports from the U. S. Consulate at Nogales, Ariz., there were 182 vessels in the Guaymas fleet at the start of the 1961-62 season. Of these, 161 cleared port as soon as the season opened. Ten more boats were said to be joining the Guaymas fleet from the more southerly shrimping port of Salina Cruz, Oaxaca.

In Mexico's general economic picture, fishery products loom with considerable bulk. Fishery products make up 6.2% of the Republic's exports, and of this figure shrimp accounts for 87.4%, virtually all of it frozen. In 1960 Mexico broke her shrimp production record for the third year in a row. Fishery products were fifth in order of money value in 1960, and would probably have stood higher on the list had it not been for the downward revaluation of the shrimp crop, and increased exports of sugar. As it is, only coffee, cotton, sugar and cattle brought more revenue into the Republic through exports than shrimp.

According to information gathered by the U. S. Embassy in Mexico and published by the Bureau of Commercial Fisheries, about 40,000 Mexican workers make their living from the fisheries industries, 30,000 actually fishing and 10,000 in shoreside plants, as salesmen, etc. There are about 32 canneries and 48 freezing plants in the Republic, not all of them operating full time on fishery products. The fisheries industry plant of Mexico is valued at between US$65,000,000 and US$70,000,000. Mexico exports about ten times as much in fishery products as she imports, the bulk of her imports consisting of fishmeal.

Ensenada Leads in Canned Products

- Ensenada, Baja California, is the capital of Mexico's fish canning industry, and the principal product for export is canned abalone, although the leading product is canned sardines, most of which are consumed at home. Mexican canned sardines are delicious, packed in a spicy tomato sauce.

1961-FISHERY PRODUCTS IMPORTED FROM MEXICO

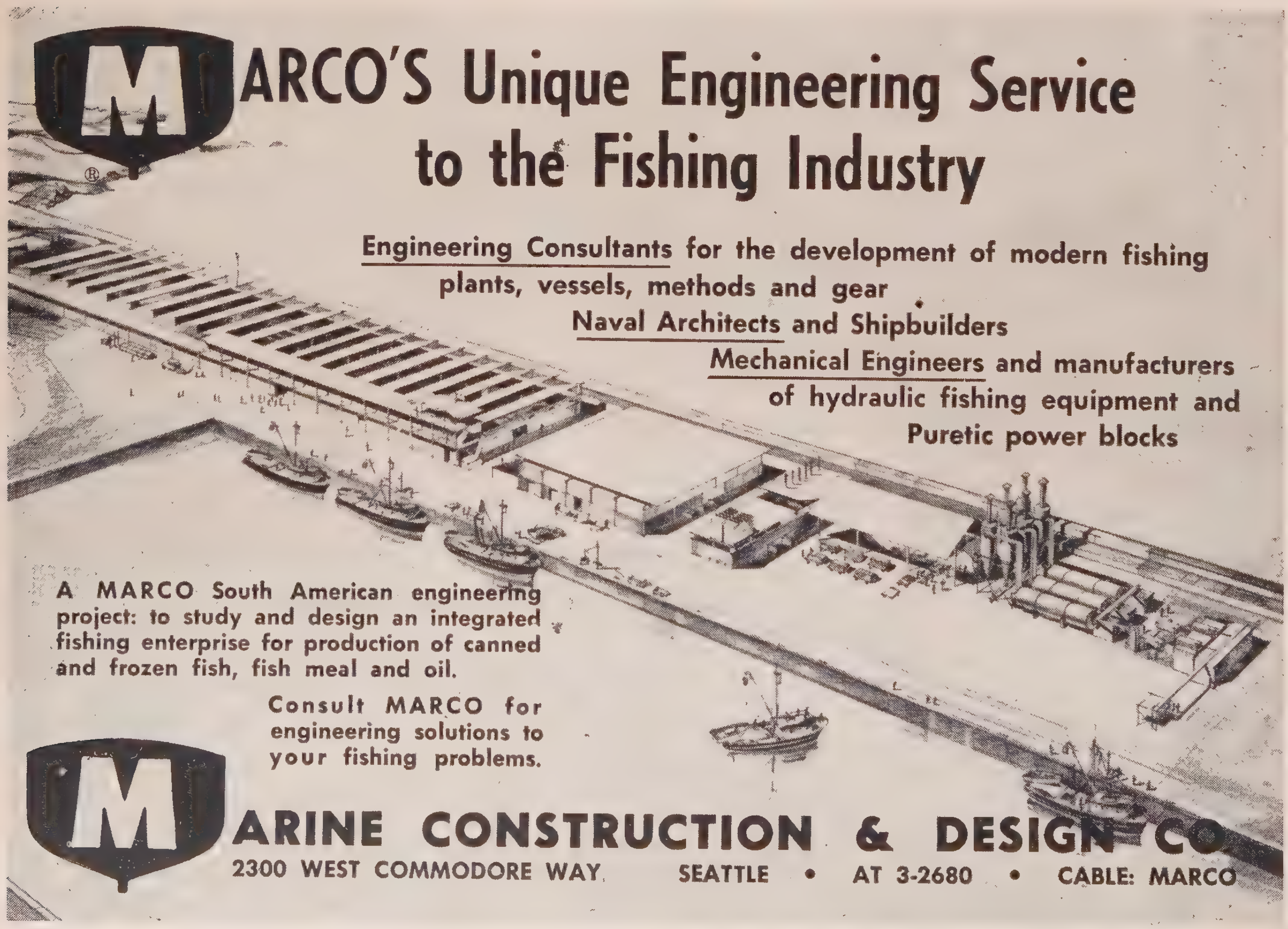
(ENTERED THROUGH CALIFORNIA AND ARIZONA)

SPECIES	Pounds												
	Nov. '60	Dec. '60	Jan.	Feb.	March	April	May	June	July	August	Sept.	Oct.	TOTAL
FISH:													
Cabrilla	...	...	...	...	2,550	14,820	25,690	29,538	...	8,000	..	2,940	83,538
Corbina, fr. & frzn.	7,953	4,652	19,385	47,971	156,720	219,461	1,275	13,398	11,684	21,813	...	3,520	507,832
Sea Bass, wht. & blk.	...	...	...	3,946	...	...	...	...	...	22,767	..	...	26,713
Tortuava, fr. & frzn.	38,197	166,302	55,055	486,055	216,902	892	...	77,213	49,108	49,495	...	...	1,139,219
Unclass., fr. & frzn.	10,275	10,087	4,036	57,944	45,610	20,565	36,457	49,646	35,285	12,310	12,304	25,450	319,969
Tuna	327,977	154,030	140,119	...	...	...	1,540	...	629,344	631,015	782,300	490,245	3,156,570
TOTAL FISH	384,402	335,071	218,595	595,916	421,782	255,738	64,962	169,795	725,421	745,400	794,604	522,155	5,233,841
SHELLFISH:													
Abalone: Fresh	...	...	...	...	...	...	..	...	...	...	...	...	...
Frozen	9,305	8,910	12,279	...	...	...	...	20,100	31,950	36,750	7,150	13,650	140,094
Canned	578,400	283,348	266,000	110,448	...	231,784	346,224	682,960	277,440	289,661	319,920	290,832	3,677,017
Dried	...	...	110	440	991	...	...	1,100	1,100	4,752	2,200	...	10,693
Fresh and Frozen:													
Clams & Clammeat	25,914	...	5,190	4,409	...	10,537	21,329	36,132	34,376	62,776	2,380	5,600	208,643
Shrimp	9,409,619	6,607,531	5,564,066	4,462,662	3,902,162	3,412,611	3,314,170	3,201,265	1,978,800	422,959	...	10,165,688	52,441,533
Spiny Lobsters	277,580	228,150	342,997	245,643	124,788	1;232	...	...	...	...	...	213,880	1,335,270
Shrimp, Canned	18,300	...	...	...	...	...	...	...	..	...	...	...	18,300
Unclass. Shellfish	...	...	...	....	...	...	1,323	...	990	...	...	295,269	297,582
TOTAL SHELLFISH	10,319,118	7,127,939	6,091,642	4,823,602	4,027,941	3,656,164	3,683,046	3,941,557	2,324,656	816,898	331,650	10,984,919	58,129,132
OTHER FISHERY PRODUCTS:													
Livers	...	2,806	...	12,540	1,660	...	9,900	5,614	...	...	10,970	...	43,490
Miscellaneous	...	...	8,751	...	4,866	167,490	44,528	260,636	312,000	144,000	120,000	51,186	1,113,457
Meal	...	...	...	...	...	...	...	...	...	...	...	...	...
Shark Fins	5,676	7,738	4,088	...	9,142	2,707	7,510	8,937	3,338	...	...	3,369	52,505
TOTAL PRODUCTS	10,709,196	7,473,554	6,323,076	5,432,058	4,465,391	4,082,099	3,809,946	4,386,539	3,365,415	1,706,298	1,257,224	11,561,629	64,572,425

Up to 1961, most of the Ensenada canneries depended almost entirely on the catch of sardines and mackerel from local waters near Ensenada. But with a rising demand, and with the march of progress, it was inevitable that larger vessels, with brine refrigeration and capable of ranging farther for fish, would come into use. In 1961, although local fishing was not good, such vessels did bring in substantial catches to Ensenada.

During the year, the oldest canning plant in Ensenada was reorganized and changed ownership.

In 1959, latest year for which such statistics are available, the sardine catch was second only to shrimp, with 19,543.2 metric tons landed. Oysters came third with 17,203.9. In 1960 Mexico began the exportation of frozen oysters to the U. S., from Tampico on the Gulf coast. Oysters are frozen in plastic bags, packed in one layer.



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BRAZIL

Coffee for Boats

● Brightest hope for the Brazilian fishing industry at present seems to be the state of Sao Paulo, where a group of competent Brazilian fishery experts has been trained by the Grupo Estadual de Pesquisas Sobre Peixes Maritimos, or State Group for Research on Ocean Fishes. This group is constituted by the Oceanographic Institute of the University of Sao Paulo and the Sao Paulo State Fish & Wildlife Service, and its men are carrying on early researches into the potentialities of the fishery industry of Sao Paulo.

Spurred in part by the Grupo Estadual of Sao Paulo, the Brazilian government is said now to be exploring the possibility of acquiring a few modern, well-equipped vessels on a barter deal for coffee, then making the boats available to Brazilian fishermen on long-term credit.

Meanwhile, fishery progress in Brazil is hampered by lack of modern vessels and gear, and of trained fishermen. Because of lack of processing and transportation facilities, and because the catch is absorbed by local markets, there is little or no exportation of fishery products from Brazil, and the only fish processing in the Republic is a comparatively low production of canned sardines and shrimp.

The most modern and businesslike fishery operation in Brazil seems to be the Taiyo Gyogyo K.K. (Japanese) industry in the state of Sao Paulo. Taiyo is the sole remaining foreign fishery firm operating by a special permission of the Government, which allows the company to continue fishing as long as vessels are of Brazilian registry, statistics are furnished to state authorities, and native crews are trained aboard. This last condition seems pretty hard to fulfill, and some Japanese boats have been said to have tied up because of a lack of Brazilian fishermen to man them.

The Taiyo company is operating three tunaboats and six trawlers, of between 350 and 400 tons capacity. They fish mostly for tuna, but catch other species as well. Shrimp, on the other hand, seems to be largely a native Brazilian catch, brought in mostly by primitive dugout boats, some with outboard motor boats, some operating trawl nets and some called parelhinas, working in pairs. None of these boats have any preserving mechanism or facilities aboard.

According to a Rio de Janeiro U. S. Embassy report, Brazil's shrimp landings in 1960 were 24,427 metric tons (one metric ton equals 2200 lbs.) valued at US$3,400,000—but this crop was not exported. Increase in 1960 landings over 1959 was almost 25%, and 31% over 1959.

Most of Brazil's fishing for all species is carried out off the southern coasts of the Republic, although three US-registered vessels are reported to be working out of Maranhao in the north.

The US Consulate at Curitiba, quoted by the US Bureau of Commercial Fisheries, reported that there are six or seven important shrimp processing plants in the state of Santa Catarina. One of these firms, although possessing rather out-of-date processing equipment, has two cargo airplanes which move its shrimp to Sao Paulo, a major market.

There are five sardine canneries in operation according to Consulate reports from Sao Paulo, and these account for about 15% of the sardine catch. Canned sardines are sold pretty well throughout the Republic, in the interior as well as the more densely-populated coastal areas.

The table below, compiled by John P. Wise, a biologist and member of a four-man FAO group now working in Brazil, Uruguay and Argentina, shows the progress of the Sao Paulo state fishery industry. The figures are quoted by the U. S. Bureau of Commercial Fisheries in a special report. Amounts are in kilograms (1 kilo equals 2.2 lbs.).

● In the waters off northeastern Brazil a tuna fishery has been in operation since July, 1956, according to a special report to *Pacific Fisherman* from the Superintendencia do Desenvolvimiento de Nordete or Administration for Development of the Northeast, an agency of the office of the President of the Republic.

This fishery at present is being carried on mostly by Japanese longliners based on the port of Recife under contract to the joint Japanese-Brazilian enterprise Inbrape.

Fish Landings at Santos, Brazil, 1959-61

(Shown in Metric Tons of 2,200 lbs.)

Caught by	Shrimp	Tuna	Misc.	Total	Grand Total
1959					
Brazilians	1,000	...	11,111	12,111	...
Japanese	...	1,113	2,878	3,992	16,103
1960					
Brazilians	1,458	29	13,335	14,822	...
Japanese	33	1,165	5,278	6,476	21,299
1961 (first half)					
Brazilians	651	...	5,523	6,175	...
Japanese	2	566	1,899	2,468	8,643

Mss Martiri has been producing very well for her owners, F. Alioto Fish Co., San Francisco, according to Mario Alioto. Powered with a 165 hp. (continuous) Murphy Diesel, the trawler fishes from Morro Bay to Crescent City. The craft is skippered by Michele "Mike" Sciancalepore.

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MARKETS

Salmon

Rational Stability

● Canned salmon marketing in the United States in 1961 was marked with stability and a rational business philosophy which turned salmon into profit of a reasonable character, and without being stampeded by the first actually adequate supply in a period of years.

This was true of the first half-year, when inventories had been shipped to the point of scarcity in most items; and equally so after the new pack came in and it was apparent the supply would be good again.

Prices were high, but so was purchasing power.

Supplies were sufficient, without being onerous.

Success sales practices of the previous year appealed to management as worthy of a report.

Autumn of 1961 saw some variation in price quotations, true; but these were traceable to the usual discounts accompanying lack of advertising and merchandising support; or to the necessity for moving minor quantities out of weak hands.

● Red halves, left a bit long by British reluctance to buy were not absolutely necessary in advance of an Adams River run to the Fraser, received concentrated support in November, 1961, when scientists forecast extremely low levels of production in 1962 on both Bristol Bay and the Fraser River.

This dismal outlook for next season in these two key areas firmed the position of Red halves around the entire northerly sector of the Pacific Rim. Holdings of this size and grade began to look like very good property indeed.

Japan, with a big carryover of Red halves from the best salmon season it has had since the war, found the inventory could be financed handily by government support, underwriting by some of the great trading companies and banks, to the total tune of some 18 billion yen.

American packers in some instances are known to have withdrawn portions of their inventories from sale with a view to spreading the available quantity of Reds and Sockeyes over the prospective period of reduced abundance in the 1962 season.

"Priced Out of the Market" Begins To Lose Its Threat

● Prices for salmon were high all through 1961, in spite of good packs and supplies which were at least more adequate than they had been for years.

You no longer heard the ominous warning from buyers that: "Salmon has been priced out of the market." Those words used to scare the packer with salmon on hand, but for too

AMERICAN CANNED FISH VALUES BY AREAS

YEAR	PACIFIC COAST						States Other than Coastal TOTAL	United States TOTAL
	Alaska	California	Oregon	Washington	TOTAL	% of Nat'l. Total		
1935	$26,072,966	$25,252,965	$ 2,851,987	$ 4,955,117	$ 59,133,035	78.8	$15,860,684	$ 74,993,719
1936	45,078,945	26,296,129	2,972,959	3,582,880	77,930,913	82.3	16,726,956	94,657,869
1937	45,041,499	30,741,773	4,163,681	5,276,928	85,223,881	81.2	19,713,750	104,937,631
1938	37,059,151	25,232,688	3,638,815	3,762,575	69,693,229	83.5	13,752,660	83,445,889
1939	34,775,988	31,639,354	4,622,664	5,192,077	76,230,083	79.0	20,228,510	96,458,593
1940	31,836,480	36,949,395	5,294,488	3,987,170	78,067,533	82.9	16,046,513	94,114,046
1941	56,453,007	39,830,950	7,704,434	7,130,960	111,119,351	80.1	27,564,806	138,684,157
1942	48,874,227	44,506,354	12,375,323	8,319,559	114,075,463	78.8	30,567,784	144,643,247
1943	58,479,130	46,842,918	7,242,950	2,975,728	115,540,726	81.8	25,615,584	141,156,310
1944	52,072,335	53,653,337	11,720,608	3,706,586	121,152,866	79.5	31,158,318	152,311,184
1945	45,491,662	60,219,179	12,543,519	7,326,616	125,580,976	82.0	27,219,595	152,800,571
1946	55,081,941	85,457,037	12,164,093	18,202,350	170,905,421	75.1	56,724,033	227,629,454
1947	89,135,362	116,493,682	20,626,850	24,949,347	251,205,241	80.9	59,475,179	310,680,420
1948	97,657,187	137,876,592	21,926,969	18,497,700	275,958,448	82.1	60,223,031	336,181,479
1949	82,225,067	119,497,465	13,683,517	23,009,231	238,415,280	80.6	57,088,625	295,503,905
1950	82,828,503	140,251,694	19,250,557	25,370,759	267,701,513	81.3	62,661,340	330,362,853
1951	80,748,052	122,572,382	15,454,209	27,312,377	246,087,020	81.7	55,123,275	301,210,295
1952	77,586,903	124,582,452*	14,284,187	21,362,466	237,816,008	77.7	68,013,190	305,829,198
1953	59,477,956	132,298,470	15,629,708	24,357,778	234,363,912*	76.5	72,515,896	306,873,674
1954	65,107,077	145,247,976	18,386,407**	32,524,805	261,266,265	78.9	69,760,245	331,026,510
1955	58,289,037	133,649,363	22,450,859***	25,671,266	240,060,525	79.1	63,514,935	303,575,460
1956	78,758,792	143,145,330	30,200,860§	18,452,364	270,557,366	77.8	77,009,097	347,566,463
1957	64,634,485	136,612,240	29,964,077§	27,576,185	258,786,987	77.3	75,979,085	334,766,072
1958	67,453,542	162,962,108	38,659,049§	31,577,105	300,651,804	77.5	87,214,236	387,866,040
1959	53,428,114	145,427,578	16,870,901	28,034,236	243,760,829	70.0	104,515,211	348,276,040
1960	77,159,090	144,833,306	18,723,750	17,138 743	257,854,889	67.2	125,466,301	383,321,190

*Includes Hawaii. **Includes Hawaii and Samoa. ***Includes Somoa, Hawaii, Puerto Rico.

§Includes Samoa, Hawaii, Puerto Rico and a minor quantity canned in Maryland.

long he had been seeing salmon sell-out at such prices. He wasn't as easily stampeded as had once been the case.

Again, the prices were *needed*. They reflected high costs in spite of fairly good packs; costs which in some cases were ruinously high. This was particularly true of much of the fish of 1960 packing, when sizes were small on the fish-per-case requirement high. Remember that in most salmon canning areas fish are bought by the piece.

In short, the high prices enjoyed a degree of stability above that of many years because they *had* to be high if the packer was to stay solvent. In such a situation, and with the experience of previous years before him, the canner in 1961 was inclined to hold until he got his price; and in most cases he got it before the new pack came in.

So the old warning about being "priced out of the market" came to lose its authority as it failed again to come true.

- Moreover, the goods were *good*. Mighty little dubious fish was packed in 1961. There were a few exceptions, but on the whole the salmon was of better-than-average quality. The 1961 Salmon Cutting showed that. The prices were high, but the quality was pretty high also. The trade found that, if the goods are right, the consumer will pay the price. Moreover, it found salmon is still a favorite food.

Part of the progress made in salmon sales stabilization can be credited to the continuing promotion of the Canned Salmon Institute. Persistent support for salmon was producing results in renewed consumer recognition of salmon as a special seafood treat.

Chums Continue in Scant Supply

- Through 1961 the available supply of Chums was always a matter of some concern to the sales managers. Pinks were availed in fair supply, true; but a $3 spread between Pinks and Chums put the latter grade, never in fully adequate quantity, under a pressure of demand which threatened complete sell-out long before new pack. Accordingly, some factors marked their Chums up a dollar as the calendar year closed.

It was at about the same time, at the end of November, 1961, that realization of the poor prospects for Bristol Bay and the Fraser River in 1961 affected the Red-Sockeye market. Firmed at both ends, the canned salmon sales list stiffened all along the line at a season of the year when selling is never active.

- A number of factors in the field of production developed during 1961 to affect the canned salmon market in aspects other than strict supply and demand.

Notable among such instances was the exceptional interest which developed in the machine packing of quarter-pound cans. With the 1960 proving of the Rooney filler, the first successful quarter-pound filling machine, there was a rush to install this equipment in 1961, mostly on Puget Sound, but also at points in Alaska, and even on Bristol Bay.

This was all in answer to the growing demand in the United Kingdom—and to a lesser extent in the United States—for salmon in quarters. With the availability of acceptable machine filling, the rush to produce the quarter-pound product in Reds and Sockeyes threatened production beyond the point of realistic response to the growing demand.

Caution came before the salmon and the over-supply never developed, although it can be considered a continuing possibility.

- Pink salmon supply for the United States in 1961 proved reasonably adequate in spite of the disastrous season on Puget Sound and in the southern portion of Southeast Alaska.

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INITIAL PRICES FOR CANNED SALMON

(Per case of 48 cans. Prices in dollars and decimals)

YEAR	Chinook Columbia Riv. Fancy	Sockeye Puget Sound	Red Alaska		King Alaska	Coho — Medium Red		Pink		Chum	
	Halves	Halves	Talls	Halves	Talls	Talls	Halves	Talls	Halves	Talls	Halves
1910	$4.4	$4.4	$5.4	$4.	$5.4	$5.	$3.2	$3.2	...	$3.1	...
1911	5.2	5.2	6.4	4.5	7.2	5.8	4.	4.	$3.2	3.8	$3.
1912	5.	5.2	5.6	4.6	5.6	4.6	3.2	2.6	2.2	2.5	2.
1913	5.	4.2	4.6	3.8	4.	3.4	2.8	2.6	2.2	2.2	2.
1914	5.	5.4	5.8	4.4	5.6	4.6	3.3	3.6	2.8	3.4	2.6
1915	5.	5.4	6.	4.6	5.	4.6	3.	3.	2.3	2.8	2.1
1916	5.	5.6	6.	4.8	5.4	5.2	3.6	3.6	3.	3.4	2.7
1917	7.	7.	9.4	6.6	9.	8.	5.4	6.6	4.6	6.4	...
1918	8.	8.	9.4	6.6	9.	9.6- 9.	6.4	6.6	4.6	7. - 6.4	4.4
1919	8.	10.	13.	9.	12.5	12.	8.	9.	5.6	8.6	5.
1920	10.	12.	13.	9.	12.	8.	6.	6.	4.4	4.6	3.6
1921	8.4	10.	9.4	8.	7.	6.	3.8	4.4	3.2	4.	2.6
1922	13.	10.	9.	7.	7.	5.	4.	4.6	3.2	4.2	2.8
1923	10.	10.	9.	6.6	8.	5.6	4.	5.	3.6	4.8	3.4
1924	8.8	9.	9. -10.	6. - 7.	8.6- 8.4	7. - 6.	5.4- 4.2	5.2- 5.	3.6	4.8	3.4
1925	8.4	9.4-10.	14.	9.	13. -12.	11. -10.	7.4- 7.	5.8- 5.	4. - 4.4	4.6- 4.4	3.6- 3.4
1926	9.4	10.	10.	8.	9.	9.	6.	5.4	4.2	5.	3.6- 3.2
1927	9.4	11.	12.4	9. - 8.6	11.4-10.6	10. - 9.	6.6- 6.	6. - 5.4	4.6- 4.4	5.4- 5.2	3.8
1928	9.8	10.4	9.4	7.4	8.6- 8.	7.4- 7.	5.4	6.6	4.4	6.4	4.
1929	10.4-10.	10.	10.6	8.	9.	8. - 7.4	5.6- 5.4	6.	4.4	5.4	4.
1930	10.	8.	12.4	8.	10.6	9.	5.6	4.	3.	3.6	2.8
1931	8.	8.	9.4	6.6	7.	7. - 6.4	4.8- 4.6	3.4	2.8	3.2	2.6
1932	6.	6. - 5.	5.8- 5.	4.	4.4	4.	3.2- 3.	3.4- 3.	2.4	3. - 2.8	...
1933	7.6- 7.	7. - 6.6	7. - 6.6	4.8	6.	5.4	...	4.8	3.	4.6	2.8
1934	7.2	5.4	6.8- 6.4	4.8- 5.	5.4	5.	4. - 3.8	4.2- 4.	3.2	4. - 3.8	3.
1935	7.2- 7.	7.	9.4- 9.	6.6- 6.4	8. - 7.	6.6	4.4	4.2- 4.	3.2	4. - 3.8	
1936	8.	7.	8. - 7.6	6.	7.	6.6- 6.4	4.4	4.	3.4- 3.	3.7- 3.6	3. - 2.8
1937	8.4	8.4	10.	6.8	9.	8.	5.	5.	3.4	4.8	3.2
1938	9.2- 8.4	7.	7.8- 7.4	5.6	7.6- 6.8	6.4	5.	4.	3.	3.8- 3.6	2.8
1939	9.2- 8.6	8.	9. - 8.6	6.7- 6.4	8.4	7. - 6.4	5. - 4.8	5.2- 5.	3.6- 3.4	4.6	3.2
1940	9.	8.4	9.6	6.6	9.2	7.4	4.8	5.4	3.8	4.8	3.4
1941	10.4	10.	13.6-13.4	8.2	12.	...	7.	7.	4.8- 4.4	6.8	4.6- 4.2
1942	13.	11.4	15.	10.	...	11.8-11.6	8.	8.	5.6	7.6	5. - 5.4
1943	13.	11.4	15.	10.	14.	11.8-11.6	8.	8.	5.6	7.6	5. - 5.4
1944	13.	11.4	15.	10.	14.	11.8-11.6	8.	8.	5.6	7.6	5. - 5.4
1945	13.	11.4	15.	10.	14.	11.8-11.6	8.	8.	5.6	7.6	5. - 5.4
1946	18.5	19.	22. -20.	16.5-13.4	20.	17. -16.	11.6	12.	8.4	11.6- 9.4	8.
1947	20. -19.	22. -19.	24.5-22.6	17.5-16.	22. -21.4	22.	15.4-15.	19. -17.2	13.5-11.5	18.5-16.5	12.5-11.1
1948	23 5-22.	22.	27. -26.	19. -18.	26. -24.	25.	17.5-15.	23. -22.	15. -13.	20. -22.	13.5-12.
1949	20. -18.	...	26.5-25.	16. -15.	24. -22.	22. -21.	12.5	16.	10.	15.	9.5- 9.
1950	19. -21.	19. -20.	28. -29.	18.	23.	19. -22.	15.5	22. -24.	15.	20. -21.1	12.
1951	21. -23.	19. -21.	29. -31.	18.	26.	25.	15.	21.	12.5	18.	11.
1952	22. -23.	20. -19.	27. -30.	17.5-18.	25.	21.22.	12. -13.	18. -20.	12.	16.	9.
1953	20. -21.	18.5-17.5	27.	17.	24.	20.	12.	18.	10.2-10.5	14.	8. -8.5
1954	20. -21.	18.5-16.5	28. -29.	16. -18.	25.	23.	13.5	20.	12.5-13.	15.	9.
1955	22. -23.	20. -21.	32. -33.	18.5-19.7	28.	26.	15.	22. -23.	13.5-14.5	18.	10. -10.5
1956	23. -24.	23. -24.	33. -34.	21. -23.	29. -30.	28.29	16.	23. -24.	13. -14.5	21.	11.5-12.
1957	24. -26.	23. -24.	33. -34.	21. -22.	28. -29.	27. -28.	15. -16.	23.	13.	19. -21.	11.5-12.
1958	25. -26.	19. -21.	33. -35.	18. -21.	28. -29.	27. -28.	15. -16.5	21.	13. -13.5	17.	11. -11.5
1959	25. -26.	24. -25.	36. -37.	23. -24.	29. -30.	29. -32.	18. -18.5	24. -25.	13.5-14.	21.	11,5-12
1960	26. -27.	24. -25.	36. -37.	24. -25.	31. -32.	31.	18.5-19.	24. -25.	13.5	22.5	12. -12.5
1961	28.5-29	25.	34. -37.	21.5-25.	--	31. -32.	18.5-20	28.	16. -16.5	25. -26.	14.5

NOTE: The title of this tabulation has been changed from "OPENING PRICES" to "INITIAL PRICES", and the prices of pre-war years, originally quoted per dozen each are converted to the per case basis which is now in general use.

The prices here quoted for the war years are the "ceilings" established by the government. Those for 1946 are the prices announced by the majority of large packers after "de-control".

The prices are quoted in dollars and decimals thereof, rather than in dollars and cents, and are based largely on formal "opening prices" announced as such by leading sellers; they are not limited exclusively to such quotations. The formal "opening prices " of different concerns are often incomplete, and vary so widely that a full presentation of them might be confusing. The purpose of this tabulation is to present comprehensively for each year the earliest prices at which substantial quantities of the pack were sold.

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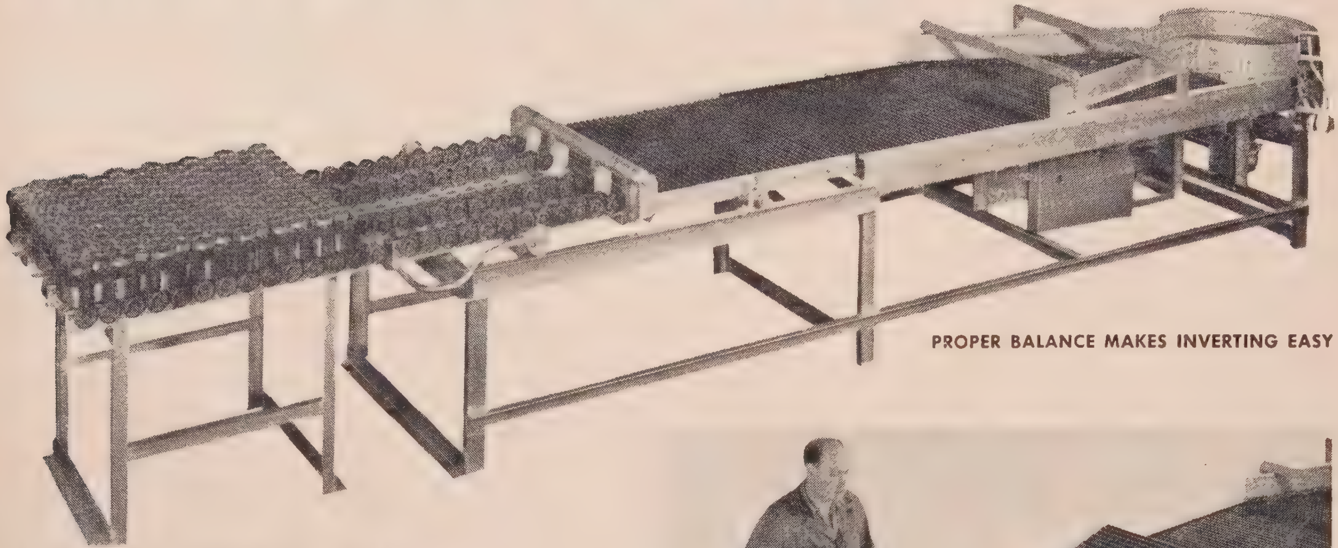

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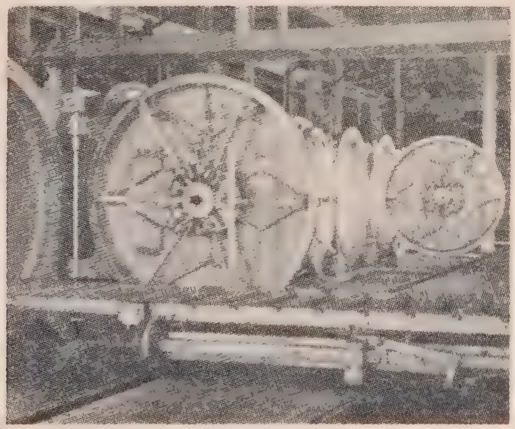

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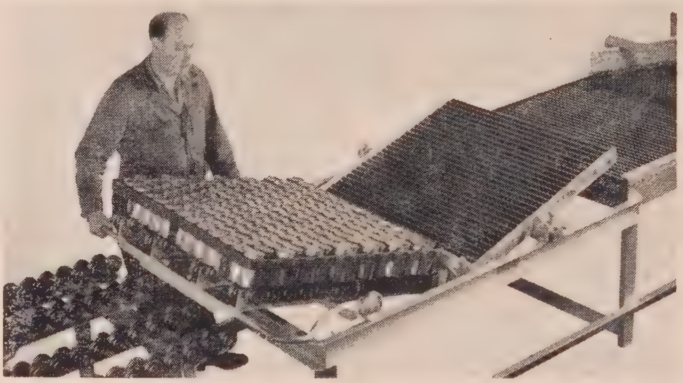

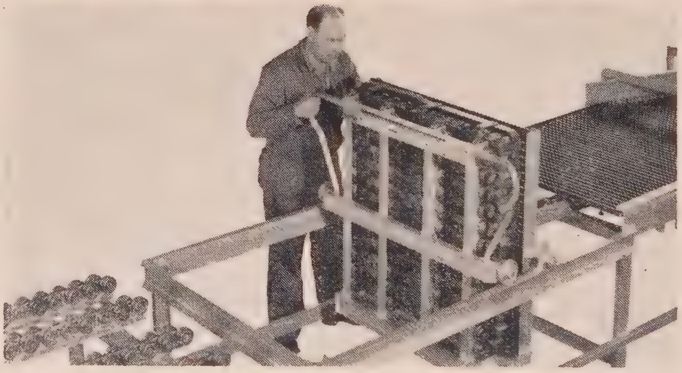

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MARKETS
British Columbia

Outlook Brightens

- The year 1961 was a fairly normal one for British Columbia's salmon marketing, and everyone seemed reasonably happy with it. After 1960 of bitter memory anything would have been an improvement. It will be recalled that in the dismal year 1960 the pack was the smallest in 40 years, so there was little to sell; and it was all the more frustrating because the United Kingdom, at last free of buying restrictions, was anxious to buy just about everything in sight.

The situation was reversed in 1961. With a salmon pack of respectable proportions — more than 1,400,000 cases, of which about 400,000 cases were Sockeye—the industry was in a better position to fulfill commitments, even though it was necessary to do business at a somewhat lower price level.

In setting export prices to the United Kingdom at roughly 12% less on Sockeye and 10% less on Cohoe, British Columbia operators were aiming at meeting the competition of the Japanese and Alaskan pack. One-pound talls or flats were quoted to the export market at $42.50, compared with $44 in 1960 for Sockeye and half -pound flats at $44 as against the previous year's $50, with quarter-pound flats at $26, where the corresponding article brought $28 the previous year.

- Even at those prices, however, the British market was not notably responsive, a fact which confirmed the good judgment of the packers in not attempting to retain the 1961 price level overseas.

The big British co-operatives, always an active factor in export sales of canned salmon, correctly appraised the supply situation and placed substantial orders, but many other traditional buyers in the United Kingdom appeared to have missed the boat. Evidently assuming that there would be an abundance of salmon to be bought and that prices might decline still further, they waited until it was too late to make discriminating purchases in large volume. They had to be content to buy what they could get, which as the situation developed, was not always just what they wanted.

Gone were the days when British buyers, hemmed in by various limitations on purchases through government regulations and dollar shortage, felt a compulsion to rush into the market for whatever they could afford. Enjoying the luxury of a wide open market, the British felt they could safely take their time, and in doing so lost the opportunity to buy in volume and quality that otherwise might have been their intention.

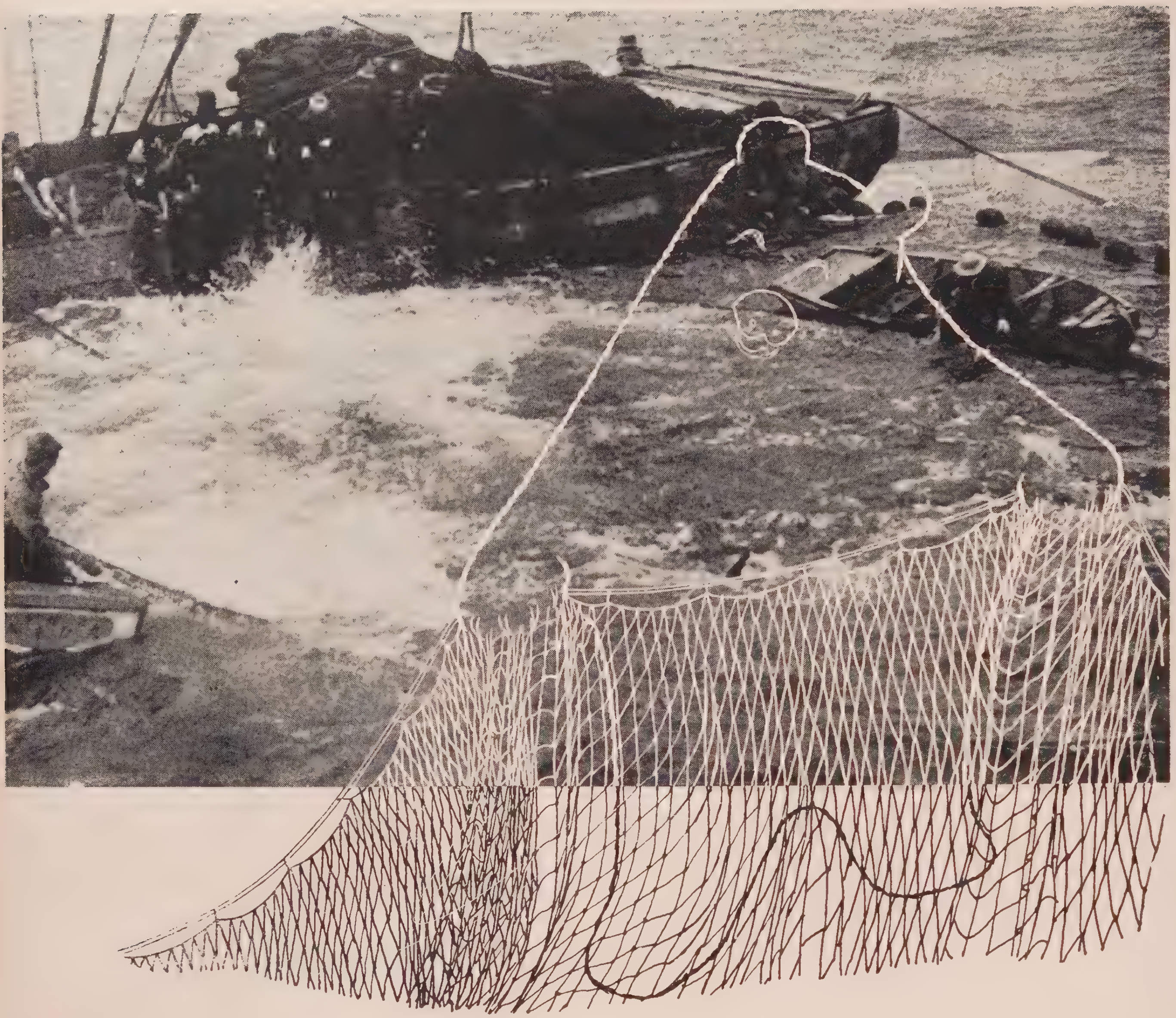
Determined to maintain stocks of brand name salmon in their most dependable market, B. C. canners carried out an aggressive sales promotion campaign in Canada, and domestic sales were generally up to average, if not a bit higher. With production costs continuing at a high level, however, can-

BRITISH COLUMBIA CANNED SALMON PRICES

	SOCKEYE			COHO, SPRING, BLUEBACK			PINK			CHUM	
YEAR	1-lb. Talls or Flats 48's	½-lb. Flats 96's	¼-lb. Flats 96's	1-lb. Talls or Flats 48's	½-lb. Flats 96's	¼-lb Flats 96's	1-lb. Talls or Flats 48's	-lb. Flats 96's	¼-lb. Flats 96's	1-lb. Talls or Flats 48's	½-lb. Flats 96's
1942-4b	$16.25	$17.50	$10.50	$11.50	$12.75	$ 8.12½	$ 6.25	$ 7.50	$ 5.00	$ 6.25	$ 7.50
1945-6b	17.65	18.90	11.20	12.90	14.15	8.82½	7.65	8.90	5.70	7.65	8.90
1946-c	18.90	20.30	...	13.90	15.25	...	8.30	9.70	...	8.30	9.70
1947	23.50	25.00	15.00	20.00	21.50	13.00	12.50	14.50	...	12.00	13.50
1948	28.50	30.00	17.50	24.50	26.00	15.25	16.50	18.00	...	15.00	16.50
1949	31.50	33.00	19.00	23.50	25.00	15.00	16.50	18.00	...	12.50	14.00
1950	31.50	33.00	19.25	23.50	25.00	15.00	17.50	19.00	12.00	14.00	14.00
1951	36.00	38.00	21.50	27.50	29.00	17.00	19.00	20.50	12.75	16.50	18.00
1952	31.50	33.00	19.00	20.50	22.00	13.50	15.00	16.50	10.75	13.00	14.50
1953	28.50	30.00	17.50	20.50	22.00	13.50	15.00	16.50	10.75	13.00	14.50
1954	30.00	32.00	18.50	22.50	24.00	14.50	16.00	17.50	11.75	14.50	15.50
1955	35.50	37.00	21.50	26.50	28.00	17.00	18.00	19.50	12.75	15.00	16.50
1956	38.50	40.00	23.00	30.50	32.00	19.00	21.00	22.50	14.25	19.00	20.50
1957	38.50	40.00	23.00	27.50	29.00	17.50	21.00	22.50	14.25	18.00	19.50
1958	35.50	37.00	21.50	26.50	28.00	17.00	20.00	21.50	13.75	15.00	16.50
1959	40.00	46.00	27.00	32.50	36.00	22.00	22.00	24.50	16.25	19.00	20.50
1960	44.00	50.00	29.00	34.50	40.00	24.00	25.00	26.50	17.25	21.00	23.00
1961	42.50	44.00	26.00	34.50	36.00	22.00	25.00	26.50	17.27	---	---

NOTE: Quotations for 1948 and 1947 packs represent packers' opening prices to the domestic market. Prices received for 1950 sales under the contract to the United Kingdom were considerably less than those quoted. Prices marked 'c' were established by the Canadian government in Dec. 1946, for sales to the domestic trade, but are also roughly equivalent to those received for export to the United Kingdom, etc. Prices marked 'b' were those paid by the British Ministry of Food in 1945-46 and 1942 to 1944.

In 1954 there was considerable variation in prices by major packers, especially for Sockeyes and Chums. Two prices were paid for Chums, according to grade, Fancy, $14.50 & $15.50; Standard, $13 and $14.50. 1961 prices are for export only.



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ned salmon was still regarded as a luxury item among many Canadian consumers. Even with the uncertain prospect of a bigger pack in 1962, there isn't much hope of reducing retail prices noticeably.

Chums Notably Scarce

- With a pack of less than 100,000 cases, the Chum situation was not without its complications. While there was the usual export of Chums to the U. S., not much of this grade was available for shipment overseas, and most of the canned Chums were absorbed in the domestic field. Some overseas markets, unable to purchase Chums in the quality desired, turned to Grade B. Pink and, despite the relatively low prices on Japanese canned Pinks, the Canadians enjoyed gratifying acceptance. The U. S. market also bought a considerable volume of canned Pink salmon from B. C., mostly at prices around $13.25 for fancy halves and $12.75 for standard grades. The Coho pack was abnormally light.

Looking to the future, the industry was concerned over the prospect of the United Kingdom's entry into the European Common Market, which might threaten discontinuance of the Commonwealth tariff preferences so important to the trade for many years.

- However, the B. C. canners hoped that in the event of becoming a member of the Common Market Britain would succeed in retaining at least a semblance of the tariff advantage now enjoyed by Canadian canned salmon. After all, the United Kingdom has always been a much greater consumer of canned salmon than other countries in the Common Market, and higher duties on salmon would affect the British consumer. In other words, an important political factor was involved, and the British government would face repercussions at home if its action contributed to increasing the cost of living in this particular category. Over the past three years, the United Kingdom bought an average of 392,416 cases of Canadian canned salmon, compared with less than 50,000 cases purchased by Belgium, Holland, France and Italy combined. These latter countries would hardly be expected to complain if the United Kingdom wished to protect her own interests as well as those of a good supplier by refraining from imposing a 20% tariff rate that otherwise might have been considered arbitrary as a requirement in joining the ECM. Such a tariff on salmon in France would create only a ripple there, but in Britain it would probably cause some consternation.

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MARKETS
United Kingdom

A Year of Recovery

By A. C. COLTMAN

● Few importers of canned salmon into the United Kingdom market during 1961 will have cause to rejoice when they examine their accounts at the end of the year.

1961 may be considered as a year of slow but steady recovery from the hangover produced by the orgy of buying which followed the abolition of restrictions on imports of canned salmon. It is common knowledge that very high retail prices were obtained during the days of import control and very large profits were easily made by speculators. Some people reached the stage when they imagined that you could sell any kind of salmon at any kind of price. Huge quantities were ordered regardless of price or quality. Naturally, the market broke and ever since that time stocks have been continually thrown on the market at ever declining prices. Moreover, the importation of salmon of inferior quality must have turned many a housewife against the product.

Nevertheless, the surplus stocks have now been largely absorbed and in fact, some items such as halves Pink salmon, staged a recovery from about 78/- to 96/- duty paid, spot. Other items such as 96 x ¼'s Pink salmon which had declined from a peak of 118/- last year down to about 88/-, have now advanced to 100/- duty paid, spot, during the year but even at this price they are below the present cost of replacement and there would seem to be considerable stocks available at this figure.

NOTE — Mr. Coltman is Chairman of Anderson & Coltman, Ltd., London, one of the important importers and distributors of canned salmon in the United Kingdom. He is an experienced, capable and thoughtful analyst of canned salmon marketing in Great Britain.

On the other hand, halves of Red salmon have continued to decline steadily in price. For example, 48 x ½'s Red Alaska salmon which were offered at about 165/- duty paid at the beginning of the year, were being sold as low at 148/- by October. The decline in halves of Red salmon naturally resulted in a corresponding decline in halves of Medium Red salmon and in fact, is now causing a falling off in the sales of Pink halves which cannot be retailed at below 2/6d per tin and still give a reasonable margin of profit to the importer and the retailer.

● It is said, that a statistician can use figures to prove almost anything he wants to prove to a person who is not fully aware of all the relevant factors involved. As the present situation is somewhat abnormal for the reasons I have given above, I do not propose to introduce any figures into my report because they would prove nothing.

Theoretically, as world population increases and the standard of living in most countries advances, the price of canned salmon should advance because the sources of supply remain limited. However, the fact is that in the United Kingdom, canned salmon is neither a necessity nor a luxury and it can only be sold readily when it is priced reasonably in relation with competitive food stuffs such as eggs, ham, bacon and similar foods.

In my opinion, it has been proved that if the retail price of a half-pound tin of Red salmon goes over 4/- in the shops, the demand is greatly reduced.

The prices for 48 x ½'s Japanese Reds were fixed in September at 145/- c.i.f. for floating cannery pack and 140/- c.i.f. for land pack, with quantity discounts ranging up to 2/6d for lots of 200,000 cartons and upwards. This was a reduction of 15/- below the price at which the previous forward sales of fancy floating cannery pack were made. On this basis of price, we consider that the consumption of halves Red salmon will be quite substantial. The prices of Red quarters had got hopelessly out of proportion and although in the previous year the price of 96 x ¼'s Japanese Red salmon had been reduced from 220/- to 212/- c.i.f., hardly any were sold here.

The present official prices for this item were announced in September by the Japanese packers at 177/6 c.i.f. for floating cannery pack and 168/- c.i.f. for land pack, and these prices are much more realistic when compared with the prices of halves.

Naturally, the prices of quarters Medium Red have declined steadily in these circumstances and 96 x ¼'s Cohoes of average quality have dropped during this period from 169/- to 150/- landed, duty paid. However, buyers are still willing to pay substantially higher prices for parcels of outstanding quality.

The opening prices of Japanese Silver salmon named in September, were as follows:—

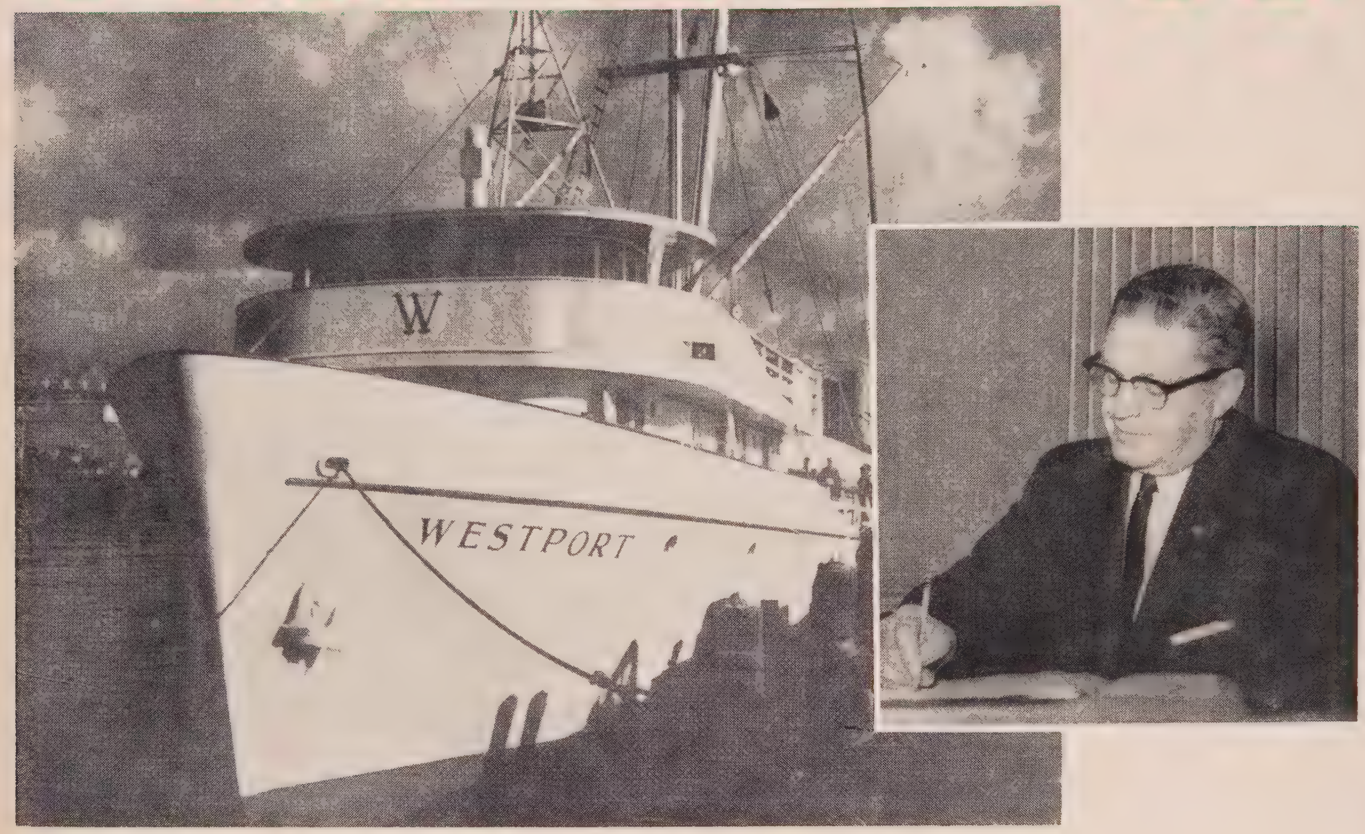
48 x ½'s	Fancy	117/6	Stand.	112/6
96 x ¼'s	Fancy	145/-	Stand.	135/-
48 x ¼'s	Fancy	71/3	Stand.	68/9

all c.i.f., main United Kingdom ports. The quantities available were not large and although the attitude of some buyers was apathetic, we feel that the United Kingdom market can easily absorb the unsold balances before the 1962 pack comes on the market.

The opening prices of Japanese Pink salmon were 90/9d c.i.f. for 48 x ½'s and 97/3d c.i.f. for 96 x ¼'s—the former was an advance of 1/9d over the previous year's price of halves but the price of quarters was the same, and, as previously pointed out, is still above the current spot value.

48 x 1's were offered at 177/- c.i.f. against the previous price of 141/- c.i.f. but quantities available were so

TRI-LOCK



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small that they were rapidly cleared. The Japanese had no Chums to offer to the United Kingdom.

According to our calculations, the Canadian opening prices in August worked out on a c.i.f. basis approximately as follows, based on an exchange rate of $2.88 to the £ Sterling:—

48	x	½'s	Sockeyes	159/4
96	x	¼'s	Sockeyes	187/6
48	x	¼'s	Sockeyes	93/9
24	x	1's	Cohoes	125/9
48	x	½'s	Cohoes	131/3
96	x	¼'s	Cohoes	159/9
48	x	¼'s	Cohoes	76/5
24	x	1's	Pink	92/9
48	x	½'s	Pink	98/3
96	x	¼'s	Pink	126/5

● Fortunately, there is always a demand for best quality Canadian Sockeye salmon under popular labels of packers and distributors and satisfactory sales are reported to have been made to the U.K.

Some sales of Cohoes have also been noted but mainly at prices slightly under the above levels.

There has been an active demand for Canadian Pink talls, and limited quantities of Canadian Pink halves have been bought by buyers here, at prices which enable them to compete with the Japanese.

The packers in the United States, who have a handicap in the shape of a 5% ad valorem duty as compared with their Canadian competitors, are reported so far to have sold very little of their 1961 pack to the U.K. It is a fact that the 1-lb. tall Red Alaska salmon which was a popular line in this country for many years, now has to bear a price ticket which appeals to very few consumers indeed.

During October, the Russians offered limited quantities of their pack which their distributors were able to offer at the following prices to those willing to buy 2,000 cases or more at one time:—

48	x	½'s	Red	145/-
48	x	1's	Red	260/-
48	x	½'s	Silver	120/-
48	x	1's	Silver	210/-
48	x	½'s	Pink	95/-
48	x	1's	Pink	187/6
48	x	½'s	Chum	85/-
48	x	1's	Chum	177/6

It is reported that they had no difficulty in disposing of the goods at these prices for delivery next February. All prices were landed, duty paid, ex-Wharf London.

● Naturally, in considering to what extent the buyers should now commit themselves on Red salmon, they are taking into consideration the expected large pack of this grade on the Pacific coast next year. For this reason, the buyers are all adopting a cautious attitude.

What is needed in this market more than anything else, is a feeling of confidence that prices have now got as low as they are likely to get for a long time. It is not surprising that buyers are still rather nervous by reasons of their bitter experience over the past two years.

The decision of our Government to apply to join the European Common Market subject to satisfactory arrangements being made to protect certain vital interests, has started one of the greatest debates in British history. Already, salmon importers are disturbed because the present tariffs on canned salmon imported by the member countries of the Common Market vary from nothing to 20%. The importers in this country believe that the suggested common tariff which will apply when the Rome Treaty comes into force, will be no less than 20% ad valorem and this rate will apply to all supplies irrespective of their source.

Such a prospect is clearly alarming to all salmon importers in this country, and steps are already being taken to persuade our Government to make a special settlement for this commodity on the grounds that most of the present members of the Common Market import very little canned salmon so that a tariff of 20% will not worry them very much, but it would worry importers in this country very greatly as it might force the retail price of canned salmon up, beyond the purchasing power of the vast majority of consumers.

Although this report was written with nearly two months of the year still to come, we do not think the position is likely to change materially during that time because these two months are not heavy consuming periods for canned salmon.

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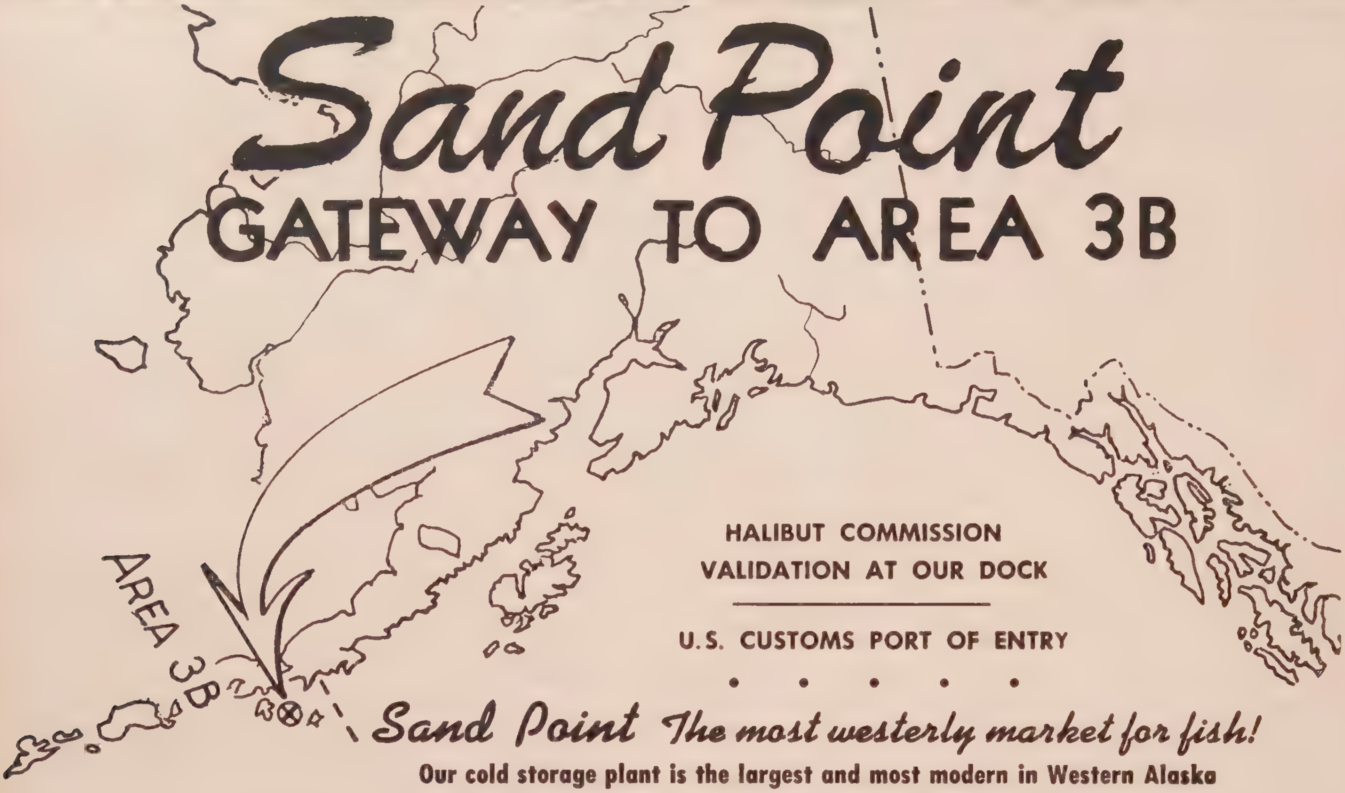

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HALIBUT

1961 Newcomers

• Halibut operations of the American and Canadian fleets in northeast Pacific waters in 1961 were over-shadowed in significance—if not in volume — by those of the Japanese in the northwestern Bering Sea; and by the certain prospect that the Japanese, and perhaps the Soviet Russians, would be fishing on the halibut grounds south of the Aleutians and Alaska Peninsula in 1962.

The Japanese by their own testimony produced 11,000 metric tons of Pacific halibut from Bering Sea in 1961. This catch—24,200,000 lbs.—is a little more than one-third as much as the combined catch of the United States and Canadian fleets in that year.

Official statements of the Japanese say that all of this fish was caught in northwestern Bering Sea, in waters where it could fairly be considered as falling outside the category of halibut "originating along the coast of North America," from the fishing of which Japan abstains under the terms of the International North Pacific Fisheries Convention.

Halibut caught by the Japanese bottomfishing fleets in eastern Bering Sea were reported as 13,997 in number and 69,940 lbs. in weight. These fish were officially reported "thrown back into the water as soon as they were found, in accordance with the regulations."

• Halibut fishermen of the United States took 40,024,000 lbs. of halibut in 1961, and those of Canada 29,613,000 lbs., for a total under the International Pacific Halibut Convention of 69,637,000 lbs.

This is a decline of 2,326,000 lbs.

Examination of the factors contributing to this decline show them to be primarily administrative and not indicative either of scarcity of fish or weakness of market.

Approximately 1,500,000 lbs. of

Pacific Halibut Catch by Areas and Nationalities

YEAR	– Pounds –										YEAR
	AREA 1	AREA 2**			AREA 3**			TOTAL American	TOTAL Canadian	GRAND TOTAL	
	American	American	Canadian	Total	American	Canadian	Total				
1932	902,271	16,026,631	5,960,640	21,987,271	21,146,037	451,761	21,597,798	38,074,939	6,412,401	44,487,340	1932
1933	722,254	14,880,259	7,649,400	22,529,659	22,887,941	637,672	23,525,013	38,490,454	8,286,472	46,776,926	1933
1934	1,541,258	13,360,103	9,004,714	22,364,817	22,829,989	726,658	23,556,648	37,731,350	9,731,372	47,462,722	1934
1935	*1,489,294	13,112,709	8,954,740	22,067,449	22,532,977	1,251,314	23,784,291	37,134,980	10,206,054	47,341,034	1935
1936	708,301	13,865,731	8,696,865	22,562,596	23,717,665	1,887,788	25,605,453	38,291,697	10,584,653	48,876,350	1936
1937	709,752	13,445,575	9,852,348	23,297,923	23,551,917	1,912,966	25,464,883	37,707,244	11,765,314	49,472,558	1937
1938	706,316	13,737,819	9,571,461	23,309,280	22,820,005	2,623,208	25,443,213	37,264,140	12,194,669	49,458,809	1938
1939	1,072,675	13,466,002	10,913,035	24,379,037	22,761,120	2,552,125	25,313,245	37,299,797	13,465,160	50,764,957	1939
1940	779,036	14,395,547	11,101,558	25,497,105	25,396,243	1,582,314	26,978,557	40,570,826	12,683,872	53,254,698	1940
1941	332,259	13,332,247	10,609,166	23,941,413	25,590,281	2,350,333	27,940,614	39,254,787	12,959,499	52,214,286	1941
1942	285,621	14,046,982	9,147,146	23,194,128	24,903,636	2,054,745	26,958,381	39,236,239	11,201,891	50,438,130	1942
1943	419,944	13,740,543	11,116,583	24,857,126	26,569,949	1,790,540	28,360,489	40,730,436	12,907,123	53,637,559	1943
1944	318,689	14,957,704	11,149,714	26,107,418	24,782,581	2,190,459	26,973,040	40,058,974	13,340,173	53,399,147	1944
1945	529,000	13,230,000	11,750,000	24,980,000	25,605,000	3,551,000	29,156,000	39,364,000	15,301,000	54,665,000	1945
1946	605,000	14,068,000	14,451,000	28,519,000	27,067,000	4,058,000	31,125,000	41,740,000	18,509,000	60,249,000	1946
1947	406,000	10,387,000	17,175,000	27,562,000	20,869,000	7,081,000	27,950,000	31,662,000	24,256,000	55,918,000	1947
1948	283,000	13,273,000	14,203,000	27,476,000	23,276,000	4,453,000	27,729,000	36,832,000	18,656,000	55,488,000	1948
1949	426,000	12,461,000	13,588,000	26,049,000	23,433,000	5,158,000	28,591,000	36,320,000	18,746,000	55,066,000	1949
1950	335,000	12,594,000	14,115,000	26,709,000	25,413,000	4,769,000	30,182,000	38,399,000	18,884,000	57,283,000	1950
1951	314,000	14,426,000	16,191,000	30,617,000	20,318,000	4,829,000	25,147,000	35,058,000	21,020,000	56,078,000	1951
1952	391,000	13,355,000	17,133,000	30,488,000	23,868,000	7,586,000	31,454,000	37,614,000	24,719,000	62,333,000	1952
1953	238,000	14,442,000	18,060,000	32,502,000	19,447,000	7,678,000	27,125,000	34,127,000	25,738,000	59,865,000	1953
1954	674,000	19,165,000	17,574,000	36,739,000	23,841,000	9,952,000	33,793,000	43,680,000	27,526,000	71,206,000	1954
1955	650,000	15,717,000	13,027,000	28,744,000	20,595,000	9,121,000	29,716,000	36,962,000	22,148,000	59,110,000	1955
1956	604,000	20,291,000	15,121,000	35,412,000	21,014,000	10,475,000	31,489,000	41,909,000	25,596,000	67,505,000	1956
1957	446,000	16,261,000	14,365,000	30,626,000	19,934,000	10,349,000	30,283,000	36,641,000	24,714,000	61,355,000	1957
1958	357,000	15,505,000	15,053,000	30,558,000	20,433,000	13,865,000	34,298,000	36,295,000	28,918,000	65,213,000	1958
1959	236,000	16,575,000	14,229,000	30,804,000	24,010,000	16,665,000	40,675,000	40,821,000	30,894,000	71,715,000	1959
1960	309,000	16,723,000	15,086,000	31,809,000	21,318,000	18,527,000	39,845,000	38,350,000	33,613,000	71,963,000	1960
1961	258,000	15,760,000	13,175,000	28,935,000	24,006,000	16,438,000	40,444,000	40,024,000	29,613,000	69,637,000	1961

NOTE: 1961 figures of the International Pacific Halibut Commission are preliminary and subject to further correction. In data for 1951 and thereafter Area 1 includes the catches from Areas 1A and 1B and Area 2 includes the catches from Areas 2A, 2B and 2C. In data for 1952 and thereafter Area 3 includes the catches from Areas 3A and 3B.

**Figures for Area 2 for 1937 and thereafter include halibut which were taken incidentally to cod fishing after the closure of Area 2, as allowed by regulations of the International Fisheries Commission for these years. Halibut so caught in 1957 was 706,000 lbs., and in 1958 was 437,000 lbs.

*This figure includes landings from Areas 1 and 4, as defined in the regulations for 1935. This amount should compare directly with the Area 1 catch of previous years, as it is not believed any fish were landed in 1935 from that portion of Area 4 which included Bering Sea.

OREGON AND CALIFORNIA HALIBUT LANDINGS

1961

MONTH	California Pounds	Oregon Pounds
May	10,000	60,078
June	10,129	109,900
July	10,000	61,355
August	10,000	40,604
September	10,000	12,926
October	5,000	5,494
November	--	45
TOTAL	55,129	290,402

NOTE: 1961 figures of the International Pacific Halibut Commission are preliminary and subject to further correction, particularly California's which include chiefly estimation.

the deficit can be accounted for by the change in the Area 2 fishing season and quota. Regulations for 1961 discontinued the second season in Area 2, a period in which about 3,000,000 lbs. of fish was taken in 1960. While the second season in Area 2 was dropped in 1961, the quota there was increased by 1,500,000 to 28,000,000 lbs. Thus it might be said that in dropping the second season and increasing the quota 1,500,000 lbs. there was a built-in administrative decline of 1,500,000 lbs. in the Area 2 catch, where most of the deficit occurred.

Second factor of importance in the overall decline in catch was the termination of the season in Area 3B, both North and South, on October 1. This was a fortnight earlier than the close in 1960, which trimmed the 3B total by more than 3,000,000 lbs., from 9,887,000 lbs. to 6,440,000 lbs.

These reductions were partly cancelled-out by a gain of a bit more than 4,000,000 lbs. in Area 3A, which includes the great producing banks from Cape Spencer westward around the rim of the Gulf of Alaska and out to the Shumagin Islands.

This gain in 3A was due in large degree to the administrative extension of the season by 20 days, from the 1960 closure July 25 until August 23 in 1961.

With the Area 3B-North season essentially one for spring operations, there was strong fishing effort there and the production of this Bering Sea area was well maintained in spite of the overall drop from the far western Area 3B as a whole.

U. S. Fleet's Share of Catch Grows

● Fleet division of the 1961 halibut catch showed a moderate reversal of the trend by which the Canadian fishermen rather consistently have been increasing their percentage of the total catch. Thus in 1961 they took 43.7% of the total, vs. 46.9% in 1960.. The percentage decline occurred in both major areas, but was much more pronounced in Area 3 with its several sub-areas.

Canada in Area 2 took 45.6% in 1961, vs. 47.6% the year before.

The American fleet, on the other hand, increased its percentage of the Area 3 catch from 53.2% in 1960 to 59.2% in 1961.

● Prince Rupert took a lead of nearly 2,000,000 lbs. over Seattle in 1961, reversing the standing of the previous year. The Canadian port had an overall total of nearly 18,500,000 lbs., while Seattle was barely above 16,526,000 lbs., both figures including landings by vessels of the other country, and of neighboring minor ports.

This crossing of boundary lines was materially reduced on the part of the Canadian fleet in 1961, although the amount of halibut deliveries by American vessels at Prince Rupert increased. Deliveries by Canadian vessels in Alaska ports fell in 1961 to 2,608,000 lbs., against 3,244,000 lbs. the year before. This was doubtless due to the stay-in-port rules which tended to encourage Area 3B boats to deliver only their deckloads at Sand Point or elsewhere while the main load was taken to Prince Rupert for sale.

Canadian landings in Washington also declined substantially from 3,381,000 lbs. in 1960 to 1,924,000 lbs. in 1961.

Ketchikan Is Third Halibut Port

● Ketchikan raised its receipts of halibut in 1961 by more than 3,000,000 lbs. over the previous year, and handily displaced Vancouver, B. C., as third-ranking halibut port.

Deliveries to Ketchikan in 1961 totaled 9,391,000 lbs., while Petersburg with 5,388,000 lbs. was second among Alaskan ports, its business also representing a substantial gain. Sitka gained slightly, but other ports in Alaska lost ground. This was particularly true with respect to the miscellaneous Central Alaska deliveries, where volume fell more than 2,000,000 lbs. to 4,812,000 lbs.

For Alaska as a whole, the landings of 25,926,000 lbs. constituted one of the best years in history.

Governments Show Concern

● Governments of both Canada and the United States late in 1961 manifest grave concern over the future of the halibut resource which has been protected and rehabilitated through their efforts in an international conservation enterprise dating back to 1924.

At the Tokyo conference of the International North Pacific Fisheries Commission in November, 1961, both countries urgently requested Japan not to permit trawling south and east of the Aleutian Islands and the Alaska Peninsula, at least until investigations by the International Halibut Commission could be completed. This re-

1961 - Halibut Fleet Landings at Seattle

MONTHS	TRIPS	HALIBUT, DRESSED											
		Chicken		Medium		Large		No. 2 Medium		No. 2 Large		TOTAL	
		Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value
April	15	16,600	$ 3,000	728,400	$ 167,200	64,200	$16,200	40,000	$ 7,600	7,700	$1,600	856,900	$ 195,600
May	83	174,700	31,400	2,960,500	645,100	1,080,100	257,400	160,700	28,500	25,600	5,100	4,401,600	967,500
June	68	255,400	45,900	1,597,200	372,700	851,800	213,400	97,500	18,800	13,200	2,800	2,815,100	653,600
July	43	271,600	48,900	957,500	230,600	353,900	94,500	55,700	11,200	8,600	1,900	1,647,300	387,100
August	48	81,900	14,700	1,070,000	283,300	527,700	150,800	90,000	20,000	21,200	5,200	1,790,800	474,000
September	54	30,500	5,500	407,000	110,900	190,700	57,600	31,300	7,200	8,000	2,000	667,500	183,200
October	60	700	100	218,300	65,900	152,800	46,400	25,900	6,700	10,700	2,800	408,400	121,900
November	10	--	--	12,400	3,700	--	--	--	--	--	--	12,400	3,700
Total	381	831,400	149,500	7,951,300	1,879,400	3,221,200	836,300	501,100	100,000	95,000	21,400	12,600,000	2,986,600
Average Price per Pound --													
1960		18.0		23,6		26.0		20.0		22.5		23.7	
1961		15.0		18.5		20.4		14.2		17.0		18.5	

1961 -Halibut Arrivals at British Columbia Ports* - 1961

(Pounds)

MONTH	Prince Rupert Butedale+	Vancouver Namu	District No. 3 and Victoria	Total Canadian	U.S. Vessels at Prince Rupert	GRAND TOTAL
April	418,000	654,000	...	1,072,000	50,000	1,122,000
May	4,130,000	2,882,000	554,000	7,566,000	540,000	8,106,000
June	5,890,000	1,807,000	496,000	8,193,000	114,000	8,307,000
July	3,527,000	1,400,000	26,000	4,953,000	691,000	5,644,000
August	2,231,000	246,000	10,000	2,487,000	364,000	2,851,000
September	439,000	191,000	10,000	640,000	...	640,000
October	62,000	52,000	13,000	127,000	...	127,000
November	13,000	30,000	...	43,000	...	43,000
1961 TOTAL	16,710,000	7,262,000	1,109,000	25,081,000	1,759,000	26,840,000
Previous Years						
1960	15,759,000	9,069,000	2,160,000	26,988,000	1,063,000	28,051,000
1959	15,587,000	6,345,000	1,887,000	23,819,000	318,000	24,137,000
1958	15,738,000	6,350,000	1,705,000	23,793,000	579,000	24,372,000
1957	14,758,000	6,205,000	1,340,000	22,303,000	1,869,000	24,172,000
1956	13,465,000	8,013,000	1,440,000	22,918,000	3,001,000	25,919,000
1955	12,393,000	5,628,000	1,830,000	19,851,000	2,751,000	22,602,000
1954	15,289,000	6,712,000	3,252,000	25,253,000	4,126,000	29,379,000
1953	17,894,000	4,979,000	1,774,000	24,647,000	1,989,000	26,636,000
1952	19,275,000	2,662,000	1,653,000	23,590,000	3,006,000	26,596,000
1951	15,717,000	2,819,000	1,923,000	20,459,000	4,381,000	24,840,000
1950	15,237,000	1,689,000	1,888,000	18,814,000	3,684,000	22,498,000
1949	13,745,000	2,129,000	2,189,000	18,063,000	4,205,000	22,268,000
1948	13,665,000	2,641,000	2,172,000	18,478,000	2,479,000	20,957,000
1947	17,868,000	4,298,000	1,819,000	23,985,000	2,585,000	26,570,000
1946	15,117,000	2,023,000	896,000	18,036,000	4,378,000	22,413,000
1945	11,606,000	2,340,000	1,163,000	15,109,000	4,571,000	19,680,000
1944	8,457,460	3,604,517	1,218,985	13,280,962	5,444,672	18,725,634
1943	6,381,348	5,155,435	1,331,575	12,907,123	12,337,126	25,018,553
1942	5,910,928	4,035,866	1,104,459	11,201,891	13,415,795	24,467,048
1941	8,625,079	3,139,021	1,014,192	12,959,499	10,033,720	28,812,612
1940	9,310,667	1,999,314	1,002,401	12,683,872	11,210,740	25,632,122
1939	9,904,289	3,018,504	445,500	13,465,162	9,319,026	22,687,319
1938	8,619,526	2,794,557	586,619	12,194,669	7,324,178	19,343,390
1937	9,026,372	2,333,370	377,796	11,765,314	7,015,057	18,773,489
1936	8,619,526	2,054,167	399,200	10,584,653	6,205,377	16,772,209
1935	7,636,704	2,246,196	349,300	10,206,054	6,927,581	17,159,781
1934	7,946,499	1,513,273	271,600	9,731,372	8,591,983	18,323,355

*Does not include landings by Canadian vessels in Alaska of 2,608,000 in 1961; 3,244,000 in 1960; and in Washington of 1,924,000 in 1961; 3,381,000 in 1960.
+Includes landings from minor British Columbia ports.

NOTE: 1961 figures of the International Pacific Halibut Commission are preliminary and subject to further corrections.

1961 HALIBUT ARRIVALS AT ALASKA PORTS* 1961

(Data in Pounds)

MONTH	Ketchikan	Wrangell	Petersburg	Sitka	Juneau	Pelican	Misc. S. E. Alaska	Central+ Alaska	TOTAL Pounds
April	65,000	...	...	...	...	...	...	338,000	403,000
May	2,078,000	210,000	1,001,000	370,000	455,000	305,000	140,000	1,581,000	6,140,000
June	2,332,000	281,000	1,863,000	499,000	575,000	454,000	353,000	750,000	7,107,000
July	2,657,000	163,000	1,541,000	303,000	336,000	331,000	140,000	589,000	6,060,000
August	1,878,000	33,000	711,000	196,000	256,000	298,000	132,000	827,000	4,331,000
September	330,000	4,000	231,000	105,000	86,000	248,000	19,000	684,000	1,707,000
October	30,000	...	31,000	10,000	10,000	11,000	...	43,000	135,000
November	21,000	...	10,000	...	10,000	2,000	...	...	43,000
1961 TOTAL	9,391,000	691,000	5,388,000	1,483,000	1,728,000	1,649,000	784,000	4,812,000	25,926,000
1960	6,263,000	660,000	3,972,000	1,234,000	2,054,000	1,973,000	415,000	6,966,000	23,537,000
1959	9,443,000	773,000	3,384,000	984,000	2,367,000	2,232,000	434,000	6,701,000	26,318,000
1958	6,992,000	521,000	3,497,000	1,179,000	2,085,000	2,449,000	386,000	5,114,000	22,223,000
1957	5,741,000	660,000	3,703,000	1,359,000	2,364,000	1,879,000	327,000	3,835,000	19,868,000
1956	7,639,000	727,000	4,151,000	1,772,000	3,049,000	2,215,000	1,154,000	3,200,000	23,907,000
1955	3,811,000	298,000	3,393,000	1,040,000	2,679,000	2,621,000	397,000	5,026,000	19,265,000
1954	5,611,000	376,000	4,117,000	2,382,000	3,382,000	3,040,000	585,000	3,408,000	22,901,000
1953	4,823,000	368,000	2,847,000	1,662,000	1,706,000	2,829,000	214,000	3,625,000	18,074,000*
1952	7,696,000	430,000	3,022,000	2,023,000	2,645,000	2,244,000	139,000	2,661,000	20,860,000
1951	5,170,000	496,000	2,869,000	1,985,000	2,386,000	2,294,000	192,000	3,642,000	19,034,000
1950	6,992,000	479,000	3,140,000	3,103,000	3,823,000	3,351,000	75,000	4,372,000	25,265,000
1949	7,628,000	499,000	2,675,000	2,008,000	2,473,000	2,102,000	41,000	4,689,000	22,115,000
1948	7,700,000	716,000	2,548,000	2,990,000	2,797,000	2,362,000	114,000	4,742,000	23,969,000
1947	7,503,000	643,000	2,828,000	2,634,000	5,432,000**	...	...	3,389,000	22,429,000
1946	9,918,000	699,000	2,943,000	2,684,000	4,363,000**	...	...	2,279,000	22,886,000
1945	2,277,000	585,000	2,161,000	2,773,000	4,363,000**	...	...	2,221,000	20,887,000
1944	9,554,962	1,008,312	2,486,084	2,694,073	3,540,637	...	...	2,569,043	21,853,111
1943	7,450,730	727,157	1,936,825	1,691,697	2,289,947	...	...	...	14,096,356
1942	5,749,469	469,037	1,559,221	834,046	1,816,148	...	...	...	10,169,162
1941	3,367,567	375,135	1,463,801	2,173,697	1,616,928	...	...	...	8,998,580
1940	3,798,134	400,735	1,718,490	1,370,412	1,984,511	...	...	...	9,481,893
1939	2,263,927	279,660	1,460,190	931,557	2,001,999	...	...	...	6,897,208
1938	2,828,111	414,928	1,965,843	906,852	2,039,814	...	...	...	8,220,752
1937	3,642,996	590,834	1,352,807	893,602	1,832,533	...	...	...	8,646,993
1936	3,556,364	494,221	1,979,813	945,933	1,541,674	...	...	...	8,654,364
1935	3,752,488	112,060	474,672	667,811	1,341,864	...	...	...	6,538,114
1934	3,155,474	284,950	1,002,792	1,172,264	1,463,761	...	...	...	7,132,059

*Landings by Canadian vessels in Alaska included, which were 2,608,000 in 1961, 3,244,000 in 1960, and 4,100,000 in 1959.
+Port Williams, Seldovia, Anchorage, Sand Point, Seward and Cordova.

**International Pacific Halibut Commission tagging.

NOTE: 1961 figures of the International Pacific Halibut Commission are preliminary and subject to further correction.

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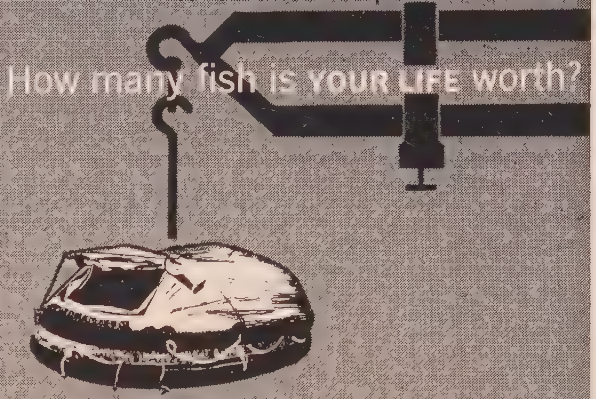
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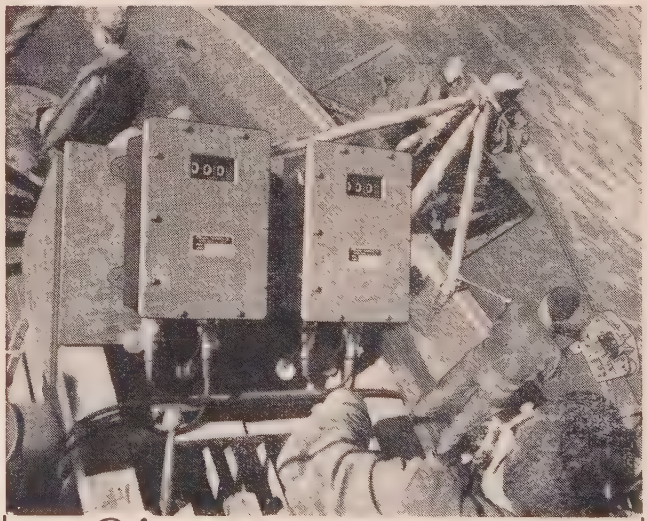

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search is designed to determine the effect of trawling in these waters on the halibut population; and whether it is possible to conduct trawling operations in the waters mentioned without damaging the halibut resources.

Responding, Japan declined to agree to the restraint requested. Immediately thereafter Japanese expeditions departed for Bering Sea, there to initiate the first Japanese winter trawl fishery tried there. It was generally anticipated that development of ice and winter weather in the Bering would bring authorization for the expeditions to move into the area where such operations had been protested by the United States and Canada.

Japan officially acknowledged that seven exploratory fishing vessels had worked in the area in question during August and September, 1961, fishing with bottom trawls, surface trawl and mid-water gear; with bottom and surface gillnets and with long lines. Thus it is to be expected that any subsequent commercial operations in this area will employ a variety of gear, especially bottom and mid-water trawls and bottom gillnets.

- That Japanese expansion below the Aleutians and Alaska Peninsula will be accompanied by similar moves on the part of the USSR is altogether to be expected; and it is known that at least one large trawler was operating within a few miles of the coast of northeastern Kodiak Island during late November, 1961.

Regulations Eliminate "Split Seasons"

- Regulations of the International Pacific Halibut Fisheries Commission for 1961 included a number of departures from previous practice, generally designed to shift fishing pressure away from stocks which had been cropped rather heavily under former split-season arrangements; and to encourage fishing on the Westward banks where additional information as to halibut movement and abundance is desirable.

Notable changes in the 1961 regulations included:

1. Division of Area 3B into North and South sections, respectively north and south of the Alaska Peninsula and Aleutian Chain.

2. Different seasons for each, 3B-North starting April 10 and 3B-South April 25. Closure in each area to be October 1 (instead of October 15, as in 1960), or the closing date for Area 3A, whichever is later. Neither of these areas carried a quota.

3. Second seasons were eliminated; but this was compensated for in large degree by the fact that the Area 2 quota was raised to 28,000,000 lbs.; and that in Area 3A to 33,000,000 lbs.

In providing the April 10 start in the Bering Sea subsection of Area 3B, and April 25 south of the Peninsula, the commission renewed its production premium to encourage the fleet to fish above the Chain and thus contribute fishery data in an area currently being trawled heavily by Japanese and Soviet bottom-fishing fleets.

The commission showed a generous side in fixing the 3-million-pound-increase for Area 3A. Its staff recom-

Annual Catches of Halibut by Areas and Seasons

	*FIRST SEASON	SECOND SEASON	THIRD SEASON	INCIDENTAL PERMIT	TOTAL
AREA 1-A: SOUTH OF HECETA HEAD					
1954	411,000	...	...	7,000	418,000
1955	402,000	...	...	23,000	425,000
1956	430,000	...	...	...	430,000
1957	303,000	...	...	...	303,000
1958	168,000	...	...	...	168,000
1959	132,000	...	...	...	132,000
1960	144,000	...	...	1,000	145,000
1961	112,000	...	...	1,000	113,000
AREA 1-B: HECETA HEAD TO WILLAPA BAY					
1954	100,000	58,000	...	39,000	197,000
1955	122,000	...	...	90,000	212,000
1956	132,000	...	...	42,000	174,000
1957	72,000	16,000	...	55,000	143,000
1958	175,000	...	...	14,000	189,000
1959	76,000	...	...	28,000	104,000
1960	124,000	...	...	40,000	164,000
1961	117,000	...	...	28,000	145,000
AREA 2: WILLAPA BAY TO CAPE SPENCER					
1954	26,497,000	9,527,000	...	776,000	36,800,000
1955	22,203,000	5,302,000	...	1,156,000	28,661,000
1956	27,230,000	7,600,000	...	581,000	35,411,000
1957	25,658,000	4,262,000	...	706,000	30,626,000
1958	26,735,000	3,424,000	...	399,000	30,558,000
1959	27,692,000	2,583,000	...	529,000	30,804,000
1960	28,134,000	3,161,000	...	514,000	31,809,000
1961****	28,613,000	...	...	322,000	28,935,000
AREA 3-A: CAPE SPENCER TO SHUMAGIN ISLAND					
1954**	29,420,000	3,340,000	...	8,000	32,768,000
1955	27,399,000	1,458,000	...	...	28,857,000
1956	29,314,000	1,486,000	...	....	30,800,000
1957	28,892,000	...	...	...	28,892,000
1958	29,730,000	...	...	...	29,730,000
1959	30,257,000	...	...	...	30,257,000
1960	29,940,000	...	...	18,000	29,958,000
1961	34,004,000	...	...	...	34,004,000
AREA 3-B: WEST OF SHUMAGIN ISLAND					
1954***	....	...	611,000	...	611,000
1955	....	...	933,000	...	933,000
1956	292,000	134,000	264,000	...	690,000
1957	1,391,000	...	...	...	1,391,000
1958	4,568,000	...	...	...	4,568,000
1959	10,418,000	...	...	...	10,418,000
1960	9,887,000	...	...	...	9,887,000
1961	6,440,000	...	...	...	6,440,000

NOTE: 1961 figures are preliminary and subject to further corrections. *Includes poundage caught in contravention of the regulations of all seasons of the year. **Area extended west to Sanak Island in 1954. ***Sanak Island westward in 1954. Figures in pounds. ****No second season in 1961.

North Pacific Halibut Fishing Seasons by Areas

YEAR	AREA 2			AREA 3A			AREA 3B			YEAR
	Opened	Closed	Days	Opened	Closed	Days	Opened	Closed	Days	
1954	5/16 8/1 ..	6/5 8/8 ..	21 8 ..	5/16 8/1 ..	7/12 8/10 ..	58 10 ..	5/16 8/1 8/15	7/12 8/10 9/9	58 10 26	1954
1955	5/12 8/14 ..	6/5 8/21 ..	24 7 ..	5/12 8/14 ..	8/4 8/23 ..	84 9 ..	5/12 8/14 8/29	8/4 8/23 9/21	84 9 23	1955
1956	5/20 9/9 ..	6/27 9/16 ..	46 7 ..	5/20 9/9 ..	2/23 9/18 ..	97 9 ..	5/12 9/9 9/30	8/24 9/18 10/23	104 9 23	1956
1957	5/1 7/29	6/17 8/5	47 7	5/1 ..	9/22 ..	144 ..	5/1 ..	10/16 ..	168 ..	1957
1958	5/4 8/31	7/2 9/7	59 7	5/4 ..	8/31 ..	119 ..	4/1 ..	10/16 ..	198 ..	1958
1959	5/1 8/22	7/8 8/29	68 7	5/1 ..	8/1 ..	92 ..	4/1 ..	10/16 ..	198 ..	1959
1960	5/1 9/11	7/31 9/18	91 7	5/1 ..	7/25 ..	85 ..	4/1 ..	10/16 ..	198 ..	1960
*1961	5/10 ..	9/7 ..	120 ..	5/10 ..	8/23 ..	105 ..	4/25 (S) 5/10 (N)	10/1 (S) 10/1 (N)	159 (S) 174 (N)	1961

*There were no second seasons in 1961. The second line under Area 3B, where the dates are designated (N) represents the seasonal period in Area 3B-North. The Area 3B dates for 1961 accompanied by the designation (S) cover the fishing period in Area 3B-South.

1961 PACIFIC HALIBUT CATCH-AREAS 2 and 3 by Months

(Pounds)

MONTH	AREA 2*			AREA 3*			TOTAL		
	U. S.	Canada	Total+	U. S.	Canada	Total	U. S.	Canada	Total+
April	----	----	----	1,055,000	1,435,000	2,490,000	1,055,000	1,435,000	2,490,000
May	3,565,000	3,299,000	6,864,000	6,822,000	5,701,000	12,523,000	10,387,000	9,000,000	19,387,000
June	5,373,000	4,715,000	10,088,000	4,718,000	3,903,000	8,621,000	10,091,000	8,618,000	18,709,000
July	3,617,000	2,437,000	6,054,000	4,989,000	3,324,000	8,313,000	8,606,000	5,761,000	14,367,000
August	1,975,000	2,029,000	4,004,000	4,823,000	1,516,000	6,339,000	6,798,000	3,545,000	10,343,000
September	1,015,000	618,000	1,633,000	1,176,000	381,000	1,557,000	2,191,000	999,000	3,190,000
October	146,000	25,000	171,000	423,000	178,000	601,000	569,000	203,000	772,000
November	69,000	52,000	121,000	----	----	----	69,000	52,000	121,000
TOTALS	15,760,000	13,175,000	28,935,000	24,006,000	16,438,000	40,444,000	39,766,000	29,613,000	69,379,000

*Area 2 includes all grounds between Willapa Bay and Cape Spencer, and Area 3 all grounds west of Cape Spencer including the present Areas 3A and 3B.

+These totals include 322,000 pounds of halibut which were taken incidentally to blackcod fishing in Area 2, as allowed by the 1961 regulations of the International Pacific Halibut Commission.

This table does not include the partially estimated amount of 258,000 lbs. landed from Areas 1A and 1B.

NOTE: 1961 figures of the International Pacific Halibut Commission are preliminary and subject to further correction.

PERCENTAGE DIVISIONS OF CATCH BETWEEN FLEETS

YEAR	CANADIAN			AMERICAN			YEAR
	Area 2	Area 3	All Areas	Area 2	Area 3	All Areas	
1961	45.6	40.8	43.7	54.4	59.2	56.3	1961
1960	47.6	46.8	46.9	52.4	53.2	53.1	1960
1959	46.7	41.2	43.5	53.3	58.8	56.5	1959
1958	49.6	40.6	44.8	50.4	59.4	55.2	1958
1957	46.3	34.7	40.3	53.7	65.3	59.7	1957
1956	42.6	33.5	38.1	57.4	66.5	61.9	1956
1955	45.5	30.8	37.6	54.5	69.2	62.4	1955
1954	47.6	29.9	38.9	52.4	70.1	61.1	1954
1953	55.8	28.0	42.9	44.2	72.0	57.1	1953
1952	56.1	24.2	39.6	43.9	75.8	60.4	1952
1951	53.9	19.6	38.0	46.1	80.4	62.0	1951
1950	52.7	15.6	32.8	47.3	84.4	67.2	1950
1949	51.4	17.9	33.7	48.6	82.1	66.3	1949
1948	51.7	18.0	33.6	48.3	82.0	66.4	1948
1947	62.3	25.3	43.7	37.7	74.6	56.3	1947
1946	50.7	13.0	30.7	49.3	87.0	69.3	1946
1945	47.0	12.2	28.0	53.0	87.8	72.0	1945
1944	42.7	8.2	25.0	57.3	91.8	75.0	1944
1943	44.5	5.8	24.1	55.5	94.2	75.9	1943
1942	39.0	7.7	22.2	61.0	92.3	77.8	1942
1941	44.2	8.4	24.7	55.8	91.6	75.3	1941
1940	43.5	5.9	23.8	56.5	94.1	76.2	1940
1939	44.8	10.0	26.5	55.2	90.0	73.5	1939
1938	41.3	10.4	24.7	58.7	89.6	75.3	1938
1937	42.6	7.5	23.8	57.4	92.5	76.2	1937
1936	38.8	7.0	21.7	61.2	93.0	78.3	1936
1935	40.8	5.3	21.3	59.2	94.7	78.7	1935
1934	40.2	3.0	20.5	59.8	97.0	79.5	1934
1933	33.9	2.7	17.7	66.1	97.3	82.3	1933
1932	27.1	2.0	14.4	72.9	98.0	85.6	1932

mended a 2-million-pound rise, and the industry conference board concurred — but the commission added another million for good measure.

- Basic rules for lay-up between trips of the North Pacific halibut fleet were unchanged in 1961 from the comprehensive program of moderating the halibut deliveries adopted in 1960.

Fundamentally, the rules provided an 8-day lay-up between halibut fishing trips, beginning at noon following arrival in port.

In the case of "camp boats," confined to British Columbia, provision was made for fishing periods, first of 12 days, and of 10 thereafter, each separated by an 8-day lay-up.

The only exemptions permitted were in the case of breakdowns.

"Minimum Price" Plan Fails

- The halibut fleet avoided a controversial "minimum price" reef in the spring of 1961 and commenced the season on time and without the strike or conflict which was threatened for a time.

The proposal which stirred-up the industry for a time was a proposal raised by the fishermen's union that prices for the year should be based on a Seattle minimum price of 27¢ per lb. for *all halibut*, regardless of size, and with no deductions for ice and slime. Figured to the traditional basis of pricing, this would be equivalent to 31.3¢ per lb. an increase of 59% over the average price paid on the Seattle market the year before.

Prices at ports other than Seattle were to be scaled down in line with traditional practice to a minimum of 20¢ compared with 27¢ at Seattle, for deliveries in the area including Cook Inlet and Westward.

The minimum price proposal failed of acceptance when it failed to receive two-thirds approval from the Seattle fleet. Primary factor in its failure was that the plan would have permitted fishing by the fishermen's cooperative in Northern British Columbia while other areas would be on strike to force its acceptance.

1961 Halibut Market Is Strong

- Halibut pricing and sales both were quite favorable from the first of the 1961 season.

Stocks were exhausted by the time new fish arrived and it came on a hungry, active market, which was bidding at least 5¢ per lb. above offers of a year previous. This premium ruled rather consistently through the entire season, even when reports that Japan was expecting to produce 40,000 tons of halibut were published in Japan. The production from western Bering Sea by the Japanese eventually reached 11,000 tons for the year, but to the end of 1961 it cannot be said to have disturbed the market, either in the United States or the United Kingdom.

Actually, the British market did not buy as much Japanese halibut in 1961 as the year before; preferring to import from British Columbia. A substantial volume of this business was done and the British buyers reported the quality of the Canadian fish was good and the selection and packing excellent.

High market prices prevailed in the principal halibut landing ports through the season. Part of the bullish tendency undoubtedly developed as result of the aggressive attitude of buyers in Ketchikan and Bellingham, who definitely were out to increase the volume delivered at those ports—and did.

Price Rises Strongly

- Seattle market price for halibut moved up strongly in 1961 over the previous year—a trend which of course was reflected at other principal points of landing all the way out to Sand Point.

Taking all grades together, the Seattle gain was 5.2¢ per lb., an increase of 28% over the 18.5% general average for 1960.

Chickens alone among the several market grades dragged behind the mean average gain. The small fish moved up only 3¢ per lb. on the average, while the large fish took the greatest gain.

In spite of the higher prices, which usually are reflected in a checking of consumer interest, sales through the halibut producing season were reported good; and the trade after production closed down showed further signs of firming.

At the end of 1961 the leading factors in the trade reported that the buying movement had been exceptionally well maintained, producing a firmness which thoughtful observers connected with the Halibut Association of North America's product promotion and advertising program.

National Halibut Promotion Well Backed

- One big factor in the strength of the halibut market—possibly even *the* big factor in maintaining its strength to the close—was the national adver-

1961 - Seattle Halibut Landings by Months and Varieties

MONTHS	Trips	HALIBUT NO. 1		HALIBUT NO. 2		LINGCOD		ROCKFISH		SABLEFISH		TOTAL	
		Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value
April	15	792,600	$ 183,400	64,300	$ 12,200	...	$...	...	$...	...	$ ...	856,900	$ 195,600
May	83	4,040,600	902,500	361,000	65,000	4,700	200	1,700	100	20,100	2,600	4,428,100	970,400
June	68	2,449,000	586,100	366,100	67,500	3,300	200	3,700	200	4,200	400	2,826,300	654,400
July	43	1,311,400	325,100	335,900	62,000	700	...	1,000	...	19,600	3,300	1,668,600	390,400
August	48	1,597,700	434,100	193,100	39,900	1,900	100	3,700	200	100,700	18,400	1,897,100	492,700
September	54	597,700	168,500	69,800	14,700	2,600	100	14,700	700	548,300	105,100	1,233,100	289,100
October	60	371,100	112,300	37,300	9,600	5,400	300	21,500	1,100	603,800	124,300	1,039,100	247,600
November	10	12,400	3,700	...	...	1,400	100	1,400	100	137,100	33,400	152,300	37,300
TOTAL	381	11,172,500	2,715,700	1,427,500	270,900	20,000	1,000	47,700	2,400	1,433,800	287,500	14,101,500	3,277,500
1960 Total	499	14,842,100	2,782,100	880,100	128,700	45,000	2,400	77,500	3,800	2,734,700	493,700	18,617,200	3,421,900
1959 Total	505	16,077,900	3,530,100	1,144,900	209,500	78,400	6,300	86,300	4,300	1,972,600	353,800	19,360,500	4,104,000
1958 Total	444	7,868,900	2,063,600	7,292,200	1,650,900	68,900	6,100	40,000	1,900	1,098,400	157,000	16,368,400	3,879,500
1957 Total	572	8,592,600	1,857,800	5,903,000	1,076,100	83,500	5,600	107,500	5,400	2,525,400	366,100	17,212,000	3,311,000
1956 Total	487	7,917,100	2,144,700	5,581,300	1,274,800	151,100	15,800	96,300	5,300	1,159,700	251,900	14,905,500	3,692,500
1955 Total	593	7,782,525	1,379,049	5,972,429	890,116	96,806	8,326	161,870	7,915	2,190,376	307,801	16,204,006	2,593,207
1954 Total	590	9,680,975	1,969,571	6,305,330	1,149,601	137,381	14,177	158,442	8,017	2,224,123	341,184	18,506,251	3,482,704
1953 Total	486	8,072,514	1,457,140	4,912,713	787,245	85,126	8,441	137,648	6,703	1,902,412	285,891	15,110,413	2,545,420
1952 Total	527	6,613,702	1,544,979	4,685,046	1,018,696	522,490	73,791	181,359	9,757	1,597,801	240,853	13,600,398	2,888,076
1951 Total	485	6,011,835	1,362,710	3,628,699	740,182	279,953	39,354	244,289	16,453	2,004,053	265,082	12,168,829	2,423,781
1950 Total	371	4,461,658	1,237,069	2,921,919	730,756	363,641	32,974	152,139	8,052	1,090,129	196,838	8,989,486	2,204,577
1949 Total	473	4,953,126	1,119,834	4,166,069	797,911	418,202	39,457	192,544	12,894	1,813,775	177,709	11,543,370	2,147,796
1948 Total	461	4,990,417	1,136,824	4,089,321	742,761	491,683	53,744	229,698	14,387	1,372,309	227,947	11,200,428	2,175,663
1947 Total	302	3,705,948	972,481	1,887,355	423,403	301,745	31,630	165,098	12,149	1,378,694	179,151	7,438,840	1,619,199
1946 Total	458	6,823,696	1,509,839	6,299,384	1,286,742	261,803	23,787	218,598	14,136	1,358,433	199,832	14,961,914	3,034,335
1945 Total	459	6,547,387	1,148,683	5,376,141	2,008,265	893,283	86,952	287,623	24,030	572,376	65,816	13,676,821	2,185,062

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tising and promotional campaign undertaken during the year by the newly-organized Halibut Association of North America.

This movement, which succeeded where a number of former efforts along the same line had failed, was remarkable for the adherence it achieved among the halibut dealers of the United States and Canada. When the HANA was incorporated, more than 95% of the halibut industry—as measured by normal purchases—had pledged support to the program. *Such a percentage of support is almost unprecedented in the history of voluntary market promotion plans.*

The Halibut Association of North America selected E. A. Ruthford of the San Juan Fishing and Packing Co. as president, and launched its program of market development and halibut promotion through the National Fisheries Institute's Advertising and Promotion Division and the J. Walter Thompson Company, which is conducting the campaign.

HANA Promotion Sponsors

● Companies participating in the Halibut Association of North America and providing for its advertising and promotion campaign by their voluntary assessments are:

Alaska—Aleutian Cold Storage Co.; Engstrom Brothers Company; Kayler-Dahl Fish Co.; Ketchikan Cold Storage Co.; E. C. Phillips & Son; Knut Thompson & Son; Wrangell Cold Storage Co.

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CApitol 8-4137 PO 69

Meredith Fish Company
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FROZEN FISH

On a Rising Curve

● Pacific frozen fish packing and selling produced far better results in 1961 than the year before.

Pricing was high, but supplies were reasonably adequate; and technology contributed improvements in quality which were reflected in consumer interest.

Evidence in support of this is found in the fact that the United States market, and that in Great Britain also, held steady under the offerings of considerable quantities of Japanese frozen halibut and sablefish, plus those of Canada and the United States producers as well, without collapse.

In short, the North Pacific frozen fish trade, *and its markets,* in 1961 enjoyed a degree of stability, quality, volume and profit not often combined in this volatile branch of the fish business.

● Fish freezers found an interesting, and to some expensive, experience in the lesson taught early in the year 1961, using the frozen salmon pack produced in 1960 as the text. Halibut had been put up in large volume, but at relatively cheap prices. Quality was good, and packing much improved, so the good halibut inventory sold-out readily by the end of Lent, 1961.

The salmon situation in the spring of 1961 was something different. With Silvers and Falls both scarce in the autumn of 1960, extremely high prices were paid by the freezers. So anxious were they to build-up stocks that they relaxed their normal quality requirements somewhat. Moreover, they didn't keep close track of the quantity frozen—or at least they let it be understood that the quantity was extremely scarce. All of this necessarily required high price tags, so high that the fish didn't sell readily. Furthermore, some of it proved below usual quality standards. Finally, there was so much more of it than anyone expected that the market went to pieces like a dropped electric light bulb.

So much for the 1961 Spring Lesson in practical frozen fish ecnomics.

1961 Halibut Pricing Higher

● Halibut prices lifted strongly at the 1961 opening, and the substantial 1961 pack of above 51,000,000 lbs. was put up at prices which in Seattle averaged 5¢ per lb. over those of the preceding year. Bidding at other ports kept in line with the Seattle figures, subject to normal discounts based on freight and the lack of access to the fresh fish market.

The first word of coming Silver salmon abundance which was to be the big frozen fish feature of 1961 came from the trollers in May, who found them swarming in the sea weeks before the Silver season opened June 15. Trollers fishing for Kings found the Silvers, albeit small and immature, in remarkable quantities.

This early promise was to be fulfilled as the season progressed and the run of Silvers available to the freezers from Oregon north through Southeast Alaska was the best in many years. Moreover, the size and quality of the fish was excellent.

The 1961 freeze of Silver salmon was outstanding in volume and character, and at the same time there was enough fish left to provide recent records for Silvers in mild cured and canned form as well.

Silver Volume Triples

● Extent of the improvement of the Silver salmon resource in 1961 can be measured fairly by study of the troll Silver salmon landings at Seattle, which in 1961 reached 3,000,000 lbs., approximately three times those of the previous year, although still far short of the peak year, 1952, when 4,900,000 lbs. of troll Silvers were delivered at Seattle.

The Fall salmon fishery of 1961 was extremely poor, offsetting to a considerable degree the improvement in Silvers.

Alaska Custom Cold Storage Freezings - 1961

COMPANY	LOCATION	(Pounds)					
		Halibut	Salmon	Sablefish	Fillet	Misc.	GRAND TOTAL
Alaska Fish & Farm Products	Anchorage	45,200	29,000	---	---	---	74,200
Aleutian Cold Storage Company	Sand Point	2,946,950	750,000	---	---	10,385	3,707,335
Juneau Cold Storage Company	Juneau	1,586,156	1,221,167	31,603	---	---	2,838,926
Ketchikan Cold Storage Company	Ketchikan	3,780,000	840,000	158,000	---	---	4,778,000
Pelican Cold Storage Company	Pelican	1,687,181	1,482,710	146,443	---	---	3,316,334
Petersburg Cold Storage Company	Petersburg	3,412,085	487,162	344,971	457,660	42,682	4,744,560
Sitka Cold Storage Company	Sitka	1,507,933	438,098	140,566	3,098	---	2,089,695
TOTAL		14,965,505	5,248,137	821,583	460,758	53,067	21,549,050

NOTE: The fish included in this table almost wholly was frozen for and owned by customers of the cold storage companies under which it is listed. Thus, much of this fish is also reported in the accompanying general table covering Pacific Frozen Fish. Thus the Alaska data from these two tables should not be combined, as that would produce gross duplication.

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Imports of Falls from British Columbia were lowest in many years, being only 3,447,000 lbs., including both fresh and frozen, against an all-time high of 9,300,000 lbs. in 1954.

The 1961 abundance of troll Silvers was reflected in the price. Average price for the season at Seattle, figured on a weighted basis, was 40.6¢ per lb., dressed head on, as compared with 53.1¢ average in 1960 for one-third the volume.

Halibut Freeze at Peak

- The 1961 pack of frozen halibut in the United States and Canada, 51,000,000 lbs., was the largest ever reported for this commodity with the single exception of the 53,000,000 lbs. frozen in 1956.

Furthermore, a very substantial amount of halibut was frozen in the form of flitches, and accordingly is reported to *Pacific Fisherman International Yearbook* generally under the heading of "Fillets" rather than halibut.

1961 - Pacific Frozen Food Fish

COMPANY	LOCATION	(Pounds)					
		Halibut	Salmon	Sablefish	Fillets	Misc.	Total
ALASKA							
Booth Fisheries Corp.	S. E. Alaska	2,744,017	109,179	49,533	---	---	2,902,729
Halibut Producers Cooperative	Alaska	3,086,507	1,586,423	51,236	---	---	4,724,166
Kayler-Dahl Fish Co., Inc.	Petersburg	1,021,751	92,154	130,214	---	131,768	1,375,887
King Crab Inc.	Kodiak	116,110	---	---	---	---	116,110
McCallum-Legaz Fish Co. Inc.	Alaska	780,000	155,000	---	---	---	935,000
New England Fish Co.	Alaska	4,200,000	132,000	5,000	---	---	4,337,000
Phillips, E. C. & Son, Inc.	Ketchikan	2,648,473	1,464,728	28,516	---	---	4,141,717
San Juan Fishing & Packing Co.	Alaska	1,338,852	697,401	165,860	156,179	---	2,358,292
Vita Food Products, Inc.	S. E. Alaska	365,875	---	---	---	---	365,875
Miscellaneous		6,474,415	2,923,115	739,641	498,821	104,232	10,740,224
TOTAL ALASKA		22,776,000	7,160,000	1,170,000	655,000	236,000	31,997,000
BRITISH COLUMBIA							
British Columbia Packers Ltd.	All Points	3,734,826	3,530,907	126,061	1,883,177	141,447	9,416,418
Booth Fisheries Corp.	Prince Rupert	859,969	107,552	---	182,096	---	1,149,617
Canadian Fishing Co., Ltd.	All Points	4,971,314	2,897,163	77,991	1,051,480	251,929	9,249,877
Prince Rupert Fishermen's Coop.	All Points	7,300,000	7,100,000	130,000	808,000	700,000	16,038,000
San Juan Fishing & Packing Co.	All Points	1,244,291	264,118	---	546,692	---	2,055,101
TOTAL BRITISH COLUMBIA		18,110,400	13,899,740	334,052	4,471,445	1,093,376	37,909,013
WASHINGTON							
Booth Fisheries Corp.	Seattle	1,580,247	613,066	186,713	123,062	100,130	2,603,218
Bornstein Seafoods, Inc.	Bellingham	22,933	---	---	931,146	---	954,079
Everett Fish Co.	Everett	98,000	116,000	164,000	302,000	16,000	696,000
Main Fish Co.	Seattle	---	---	29,750	112,900	53,000	195,650
McCallum-Legaz Fish Co.	Seattle	800,000	200,000	200,000	250,000	10,000	1,460,000
New England Fish Co.	Seattle	275,000	104,000	33,000	---	---	412,000
San Juan Fishing & Packing Co.	Seattle	1,884,575	602,797	352,646	182,170	55,000	3,077,188
Seaport Fish Co.	Seattle	401,683	526,555	73,820	84,965	194,161	1,281,184
Washington Fish & Oyster Co.	Seattle	887,135	374,500	320,405	161,760	56,899	1,800,699
Whiz-Eardley Fisheries	Seattle	1,200,000	400,000	277,000	*1,674,500	---	3,551,500
Miscellaneous		2,767,427	813,082	71,666	---	---	3,652,175
TOTAL WASHINGTON		9,917,000	3,750,000	1,709,000	3,822,503	485,190	19,683,693
OREGON							
Bumble Bee Seafoods	Astoria	106,819	426,044	19,700	2,070	280,179	834,812
New England Fish Co.	Astoria	10,000	5,000	28,000	202,000	---	245,000
Portland Fish Co.	Portland	87,000	215,000	41,000	48,000	29,000	420,000
San Juan Fishing & Packing Co.	Warrenton	---	220,000	39,540	1,200,050	20,000	1,479,590
TOTAL OREGON		203,819	866,044	128,240	1,452,120	329,179	2,979,402
CALIFORNIA							
TOTAL CALIFORNIA		5,000	444,000	61,000	830,000	3,012,000	4,352,000
TOTAL PACIFIC COAST		51,012,219	26,119,784	3,402,292	11,231,068	5,155,745	96,921,108

*Includes 600,000 lbs. halibut steaks and 50,000 lbs. salmon steaks.

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This business in the flitching of halibut continues to grow apace and gives promise of permanence in halibut marketing, and to replace to some degree the consumer packaging of halibut. Flitches, with their opportunities for portionizing and preparation-to-order, have become a primary factor in Pacific fish freezing.

● Among the 1961 changes in the primary stage of the Pacific fish freezing business were the acquisition by Washington Fish & Oyster Co. of the Cordova Cold Storage, which it put immediately into operation.

Another development, also in Alaska, came to fruition in the spring of 1962 with the construction in Kodiak of a new plant, Alaska Ice & Cold Storage Co. under the management of J. Howard Wakefield.

One severe loss of the year was the burning and sinking in Puget Sound late in August, 1961, of the freezership *Alaska Reefer* with a cargo of 275,000 frozen *salmon*, not pounds.

The fish plant and cold storage of the New England Fish Co. at Astoria, Ore., was purchased in 1961 by the Northwest Fur Breeders Cooperative, which also operates a freezer and cold storage at Edmonds, Wash., for supplying the fur animal food needs of its member growers.

● A new development of early 1962 which may be expected to exert a definite influence on Pacific frozen fish business was the proposal by the Department of the Interior of Federal standards for grades of frozen sole and flounder fillets.

The proposed description of the product was put in these words:

HALIBUT FREEZING IN CANADA BY MONTHS

(Pounds)

Year	Jan.	Feb.	March	April	May	June	July	August	September	October	November	December	TOTAL
1943	282,093	296,651	379,829	573,065	2,311,086	2,630,088	654,403	683,421	1,149,085	175,542	100,641	86,663	9,322,567
1944	282,698	273,600	348,847	86,289	314,432	5,465,098	3,232,596	802,380	499,926	436,090	171,886	195,405	12,109,247
1945	394,811	222,238	240,413	220,018	3,489,342	3,408,682	3,408,682	645,187	924,675	924,671	623,475	362,478	14,864,672
1946	183,346	344,076	571,122	10,869	4,558,350	3,798,912	849,659	1,403,497	335,440	174,361	304,517	166,185	12,700,334
1947	332,759	217,645	358,022	167,994	6,059,714	4,782,689	2,186,016	2,575,403	287,595	206,741	52,711	18,000	17,245,289
1948	132,000	68,000	186,000	21,000	7,623,000	4,530,000	1,541,000	210,000	276,000	56,000	182,000	*	14,825,000
1949	30,000	7,000	21,000	49,000	7,821,000	4,990,000	1,878,000	402,000	85,000	340,000	43,000	9,000	15,675,000
1950	10,000	41,000	41,000	260,000	8,953,000	4,991,000	2,039,000	392,000	90,000	321,000	237,000	**	17,375,000
1951	16,000	42,000	32,000	87,000	11,499,000	3,071,000	560,000	1,109,000	164,000	44,000	7,000	21,000	16,652,000
1953	79,000	136,000	119,000	165,000	5,662,000	9,498,000	2,487,000	2,175,000	222,000	77,000	15,000	3,000	20,638,000
1954	49,000	112,000	181,000	110,000	6,367,000	9,266,000	2,696,000	2,951,000	262,000	130,000	91,000	16,000	22,231,000
1955	102,000	128,000	186,000	42,000	5,077,000	4,621,000	7,641,000	2,312,000	1,747,000	121,000	68,000	72,000	22,117,000
1956	132,000	203,000	107,000	141,000	2,209,000	5,456,000	2,661,000	2,341,000	2,298,000	206,000	28,000	29,000	15,811,000
1957	69,000	110,000	106,000	272,000	5,965,000	5,091,000	2,299,000	2,488,000	1,043,000	502,000	85,000	50,000	18,080,000
1958	92,000	60,000	88,000	80,000	4,832,000	6,510,000	2,638,000	2,613,000	1,097,000	170,000	*	*	18,180,000
1959	72,000	32,000	71,000	457,000	5,555,000	7,551,000	3,734,000	793,000	582,000	406,000	251,000	157,000	19,589,000
1960	79,000	150,000	70,000	1,065,000	5,568,000	5,442,000	3,390,000	964,000	1,464,000	397,000	*	42,000	18,846,000
1961	107,000	61,000	128,000	708,000	6,200,000	6,453,000	4,415,000	2,489,000	580,000	200,000	*	*	21,341,000

NOTE: 1952 data not available.
All figures in accordance with latest reports.

*Data not available.

**Less than three firms reported, therefore the data may not be shown.
Source: Dominion Bureau of Statistics - Ottawa, Canada.

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Pacific varieties covered by the standard are the following soles: Dover, English, Gray, Lemon, Rock, Sand and Petrale; and Starry flounder.

Atlantic varieties of flounder covered include: Blackback, Yellowtail, Dab or Plaice and Fluke.

A number of styles are accepted. For example, Style I consists of solid pack, with the fillets frozen together. This style is subdivided into: Type A, fillets packed in a single block; Type B, fillets packed and frozen with separators aiding division into smaller weight units. Style II consists of individually quick-frozen fillets.

- From the standpoint of supply, perhaps the most baffling aspect of the North Pacific frozen fish business in 1961 was the continued severe decline in the supply of true cod from the deliveries of the otter trawl fishery.

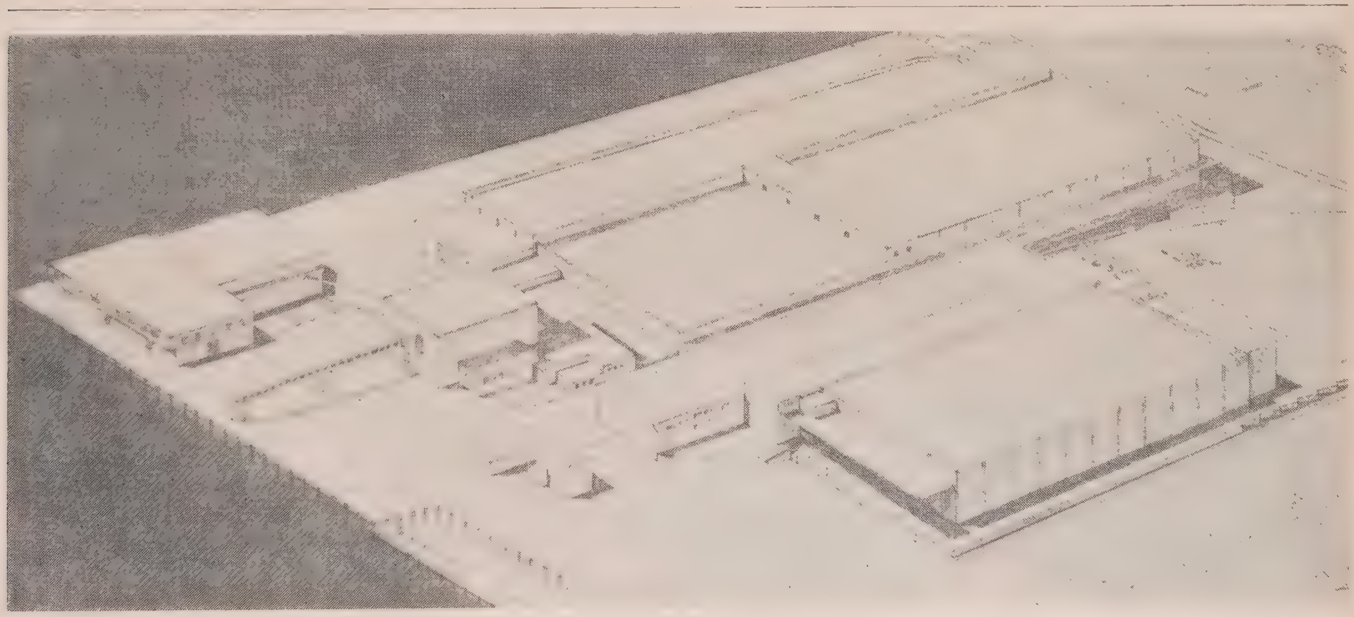
For years one of the mainstays of the fishery, with landings of the species at Seattle alone averaging 4.7 million pounds from 1954 to 1959, in 1960 the deliveries had declined to 1.7 million pounds at Seattle; and in 1961 they shrank to a mere 624,000 lbs.

- Shellfish freezing rocketed to 11,-

SALMON FREEZING IN CANADA BY MONTHS

						(Pounds)							
Year	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	TOTAL
1943	42,410	76,821	1,722	1,410	46,691	579,333	1,289,797	1,842,880	3,306,198	4,693,989	2,738,670	194,089	14,814,010
1944	190,468	366,346	199,226	34,334	35,166	799,534	1,736,542	2,902,804	3,602,202	3,489,092	490,764	216,862	14,063,340
1945	419,230	95,244	360,661	19,945	158,305	822,475	822,475	3,789,008	4,264,479	4,264,479	1,313,675	401,122	16,731,098
1946	18,904	520,509	902,832	43,216	114,952	1,213,867	2,131,929	3,098,060	3,709,790	6,134,139	3,262,982	421,969	21,573,149
1947	271,572	221,343	270,066	41,620	342,709	921,265	2,328,428	2,659,952	2,628,493	6,477,323	1,873,407	48,000	18,084,178
1948	443,000	147,000	7,000	15,000	243,000	1,498,000	2,237,000	2,626,000	2,771,000	10,387,000	2,009,000	291,000	22,674,000
1949	157,000	22,000	133,000	107,000	242,000	1,935,000	2,961,000	4,565,000	3,917,000	7,362,000	1,463,000	24,000	22,788,000
1950	4,000	22,000	22,000	5,000	227,000	1,224,000	2,462,000	5,246,000	8,678,000	7,149,000	702,000	8,000	25,749,000
1951	25,000	72,000	2,000	11,000	229,000	1,114,000	2,677,000	4,329,000	4,690,000	6,989,000	1,311,000	16,000	21,465,000
1952	10,000	29,000	100,000	80,000	395,000	1,804,000	3,227,000	5,244,000	3,034,000	2,151,000	1,508,000	18,000	17,600,000
1953	28,000	72,000	30,000	86,000	349,000	1,512,000	2,934,000	4,749,000	5,149,000	6,872,000	665,000	38,000	17,149,000
1954	15,000	70,000	353,000	29,000	204,000	709,000	3,138,000	2,932,000	4,333,000	5,051,000	512,000	28,000	17,374,000
1955	53,000	32,000	47,000	41,000	107,000	914,000	3,579,000	4,165,000	2,850,000	1,218,000	148,000	30,000	13,184,000
1956	33,000	23,000	4,000	16,000	321,000	1,370,000	3,598,000	4,907,000	2,706,000	2,366,000	148,000	33,000	15,525,000
1957	50,000	18,000	30,000	60,000	221,000	1,159,000	3,152,000	3,156,000	1,458,000	627,000	148,000	26,000	10,105,000
1958	30.000	31.000	27.000	19,000	251,000	1,006,000	3,483,000	5,497,000	2,818,000	2,043,000	*	*	15,205,000
1959	28,000	22,000	29,000	108,000	351,000	1,508,000	2,518,000	1,588,000	1,310,000	1,352,000	592,000	37,000	9,444,000
1960	62,000	76,000	31,000	49,000	261,000	1,210,000	3,411,000	3,963,000	3,563,000	1,644,000	512,000	42,000	14,775,000
1961	57,000	21,000	49,000	77,000	527,000	1,261,000	3,088,000	3,776,000	2,089,000	856,000	*	*	11,801,000

NOTE: All figures in accordance with latest reports. *Data not available. Source: Dominion Bureau of Statistics, Dept. of Trade & Commerce.



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409,000 lbs. in the Pacific states and British Columbia during 1961, with a specially large portion of the total consisting of shucked meats with their necessarily higher value per pounds over such gross items and crabs frozen in the shell.

King crabmeat, with 2,890,000 lbs. frozen, easily became the leading factor; and particularly so since this species also accounted for a very substantial percentage of the 3,814,000 lbs. of crab frozen in the shell.

In the field of King crab freezing, on which the Alaska King crab business had its beginnings, 1962 produced a significant development in the freezing of King crabmeat in blocks by a special technique for subsequent canning.

This variation was initiated by one American company in 1961; while the Japanese industry produced some 700 tons of King crabmeat in the eastern Bering Sea in the fall of 1961, sending most of it to Belgium and France for canning there.

Expansion of this combined freezing-and-canning operation is anticipated in future.

Another development in shellfish freezing, and one which can be expected to play an increasingly important role in the future, involves the freezing of the small Ocean Pink shrimp of Alaska in shaped tubes to give a consolidated bar of shrimp meat which, upon being sliced while in frozen state, gives cutlets shaped large shrimp, which are then breaded and packaged for frozen storage. Initiated at Seward in 1961, extension of this enterprise further to Westward was anticipated in the current year.

- Advance of Japanese fleet trawling and processing operations through the Aleutian Island and into the western waters of the Gulf of Alaska early in 1962 may be expected eventually to have a substantial impact on Alaska seafoods freezing.

In their initial operations on the fringe of the Gulf of Alaska, the two Japanese fleet units licensed in 1962 will necessarily operate on grounds which have produced a large part of the United States and Canadian halibut catch, as well as much of the American production of King crabs. The whole commercial utilization of both of these species is prohibited for 1962, some quantities will inevitably be taken—and there is no definite limit to the restraint, particularly upon King crab.

WASHINGTON TRAWL LANDINGS

Year	Sole and Flounders	"Cod"	Lingcod	Sablefish	Rockfish	Miscellaneous	TOTAL	Year
1930	339,932	26,318	---	---	24	32,419	398,693	1930
1931	323,064	30,269	---	---	----	3,674	357,007	1931
1932	281,302	46,512	---	---	1,000	1,374	330,188	1932
1933	296,517	59,965	---	---	----	5,200	361,682	1933
1934	247,684	25,405	13,454	---	8,313	6,116	300,972	1934
1935	2,575,998	185,786	285,759	---	63,284	23,743	3,134,570	1935
1936	4,791,994	406,361	237,229	---	81,301	22,650	5,539,535	1936
1937	4,265,491	441,130	235,431	---	72,640	14,919	5,029,611	1937
1938	5,036,852	456,814	286,439	---	107,163	21,952	5,909,220	1938
1939	4,659,122	354,805	197,982	---	112,395	231,614	5,555,918	1939
1940	5,917,096	518,705	247,007	---	248,711	946,788	7,878,307	1940
1941	7,977,576	457,253	199,128	---	93,286	582,295	9,309,538	1941
1942	9,575,018	1,172,811	3,845,055	118,406	1,034,417	717,279	16,462,986	1942
1943	13,350,936	996,963	4,859,693	778,451	4,464,702	1,015,394	25,366,139	1943
1944	7,806,664	623,151	4,254,298	1,429,682	5,132,233	270,898	19,516,926	1944
1945	9,185,003	2,417,053	4,177,839	529,507	16,093,712	211,068	32,614,182	1945
1946	9,709,656	3,701,647	3,193,436	628,756	10,094,207	93,705	27,421,407	1946
1947	9,294,256	2,442,583	2,481,497	155,981	6,024,582	99,887	20,498,786	1947
1948	13,744,310	5,371,084	4,649,453	314,229	10,262,442	162,166	34,503,684	1948
1949	10,368,493	5,465,538	3,063,672	586,368	12,610,526	588,282	32,682,879	1949
1950	10,379,364	6,330,873	2,365,948	497,822	12,210,430	414,731	32,199,168	1950
1951	11,016,660	8,395,728	1,844,559	1,277,731	9,939,526	2,057,590	34,531,794	1951
1952	12,865,755	9,976,893	1,510,339	643,485	11,288,025*	3,375,374	39,659,871	1952
1953	7,890,623	8,183,080	949,757	225,228	6,979,133*	4,468,543	28,696,364	1953
1954	12,314,392	15,392,911	1,517,995	335,995	12,857,626*	1,593,525	44,011,733	1954
1955	13,890,754	12,608,123	3,428,200	316,950	9,082,237*	3,512,835	42,839,099	1955
1956	14,186,788	9,560,914	2,845,989	3,268,911	10,689,677*	1,756,587	42,308,866	1956
1957	13,459,636	11,280,451	2,566,023	563,968	8,787,706*	5,482,072	42,139,856	1957
1958	10,684,243	12,243,074	2,876,935	370,321	8,134,745*	8,516,854	42,826,172	1958
1959	12,521,754	12,973,903	4,502,215	939,921	12,050,303	7,659,973	50,648,069	1959
1960	13,091,035	5,129,139	4,750,582	958,062	11,211,965	5,135,071	40,275,854	1960
1960	13,085,500	5,121,181	4,745,053	979,377	10,699,242	7,428,450	42,058,803	1960
1961	12,341,663	2,795,064	4,683,088	480,705	14,141,453	5,673,732	40,115,705	1961

*Includes Pacific Ocean Perch: 1952 - 1,694,355; 1953 - 3,101,562; 1954 - 6,250,000; 1955 - 3,498,758; 1956 - 4,994,875; 1957 - 4,515,704; 1958 - 2,736,207; 1959 - 5,839,951; 1960 - 6,062,511; 1961 - 7,705,884.

NOTE: 1961 figures include estimates through the balance of the year made by the Washington Department of Fisheries.

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PACIFIC FROZEN FISH

DISTRICT & YEAR	Halibut Pounds	Salmon Pounds	Fillets Pounds	Sablefish Pounds	Miscellaneous Pounds	TOTAL	DISTRICT & YEAR
1951							1951
Alaska	19,577,948	8,780,110	6,888	3,241,556	820,473	32,427,075	Alaska
British Columbia	13,358,332	16,000,909	2,292,931	1,050,718	7,492,483	40,195,373	British Columbia
Puget Sound & Wash. Coast	7,789,536	4,314,516	2,119,910	1,791,000	2,275,577	18,290,539	Puget Sound & Wash. Coast
Columbia River & Ore. Coast	291,936	735,305	3,199,153	189,694	124,761	4,540,849	Columbia Riv. & Ore. Coast
California	14,690	172,706	253,169	8,445	2,503,039	2,952,049	California
TOTAL, 1951	41,032,442	30,003,546	7,872,151	6,281,413	13,216,333	98,405,885	TOTAL, 1951
1952							1952
Alaska	17,341,747	5,327,279	8,977	988,520	205,955	23,872,478	Alaska
British Columbia	12,992,587	17,351,803	7,418,334	883,769	3,720,635	42,367,128	British Columbia
Puget Sound & Wash. Coast	8,345,650	5,532,676	3,004,786	1,661,919	751,310	19,296,341	Puget Sound & Wash. Coast
Columbia Riv. & Ore. Coast	219,223	1,157,484	3,827,761	166,072	136,084	5,506,624	Columbia Riv. & Ore. Coast
California	8,676	448,647	1,907,142	72,671	4,134,131	6,571,267	California
TOTAL, 1952	38,907,883	29,817,889	16,167,000	3,772,951	8,948,115	97,613,838	TOTAL, 1952
1953							1953
Alaska	19,727,501	6,399,247	46,675	2,599,418	730,465	29,503,306	Alaska
British Columbia	18,214,460	14,032,572	5,462,997	1,078,236	534,395	39,312,660	British Columbia
Puget Sound & Wash. Coast	9,473,444	6,380,891	1,654,189	1,651,734	462,602	19,622,950	Puget Sound & Wash. Coast
Columbia Riv. & Ore. Coast	389,483	630,630	2,382,420	204,842	676,081	4,283,456	Columbia Riv. & Ore. Coast
California	90,657	702,556	2,037,765	172,359	2,623,447	5,626,784	California
TOTAL, 1953	47,895,545	28,145,986	11,584,046	5,706,589	5,016,990	98,349,156	TOTAL, 1953
1954							1954
Alaska	20,987,363	9,341,468	57,468	3,072,158	203,706	33,662,163	Alaska
British Columbia	16,268,341	12,354,783	4,687,477	838,571	749,663	34,898,841	British Columbia
Puget Sound & Wash. Coast	12,201,900	4,740,637	2,651,084	1,498,376	460,545	21,552,542	Puget Sound & Wash. Coast
Columbia Riv. & Ore. Coast	864,352	788,963	1,672,109	154,456	210,124	3,690,004	Columbia Riv. & Ore. Coast
California	118,292	709,173	2,192,234	234,319	3,926,655	7,180,673	California
TOTAL, 1954	50,440,248	27,935,024	11,260,372	5,797,886	5,550,693	100,984,223	TOTAL, 1954
1955							1955
Alaska	16,597,154	4,459,926	328,613	2,389,290	102,615	23,877,598	Alaska
British Columbia	15,311,383	10,095,148	1,052,911	936,661	1,163,657	28,559,760	British Columbia
Puget Sound & Wash.Coast	11,058,245	4,034,495	2,913,312	1,638,426	714,435	20,358,913	Puget Sound & Wash. Coast
Columbia Riv. & Ore. Coast	276,224	554,345	1,121,886	118,000	123,275	2,193,730	Columbia Riv. & Ore. Coast
California	63,000	966,000	1,590,713	227,599	1,987,065	4,834,377	California
TOTAL, 1955	43,306,006	20,109,914	7,007,435	5,309,976	4,091,047	79,824,378	TOTAL, 1955
1956							1956
Alaska	21,718,748	8,603,212	3,818	1,919,865	77,455	32,323,098	Alaska
British Columbia	20,074,256	15,891,317	5,532,963	430,934	959,490	42,888,960	British Columbia
Puget Sound & Wash. Coast	11,058,245	6,746,753	3,235,661	2,002,242	1,256,057	24,465,292	Puget Sound & Wash. Coast
Columbia Riv. & Ore. Coast	450,762	1,790,544	1,290,170	230,583	288,374	4,023,433	Columbia Riv. & Ore. Coast
California	109,000	1,263,000	1,060,000	165,106	2,765,894	5,363,000	California
TOTAL, 1956	53,577,345	34,294,836	11,122,612	4,721,730	5,347,270	109,063,783	TOTAL, 1956
1957							1957
Alaska	13,710,555	6,890,597	266,483	2,803,496	19,744	23,690,875	Alaska
British Columbia	13,461,740	8,357,870	6,137,929	943,047	583,237	29,483,823	British Columbia
Puget Sound & Wash. Coast	10,372,000	3,713,634	2,736,000	1,979,000	1,085,000	19,885,634	Puget Sound & Wash. Coast
Columbia Riv. & Ore. Coast	871,000	793,000	2,023,000	302,180	313,000	4,302,180	Columbia Riv. & Ore. Coast
California	55,000	270,000	1,018,000	325,000	2,475,000	4,143,000	California
TOTAL, 1957	38,470,295	20,025,101	12,181,412	6,352,723	4,475,981	81,505,512	TOTAL, 1957
1958							1958
Alaska	18,259,707	5,879,030	3,600	1,341,179	150,000	25,633,516	Alaska
British Columbia	15,707,209	15,598,186	4,932,102	213,598	1,442,444	37,893,539	British Columbia
Puget Sound & Wash. Coast	12,990,000	4,830,086	2,342,597	1,137,445	1,036,496	22,345,624	Puget Sound & Wash. Coast
Columbia Riv. & Ore. Coast	527,000	558,115	2,432,000	70,000	725,985	4,313,100	Columbia Riv. & Ore. Coast
California	238,000	201,382	994,767	148,367	4,070,000	5,652,516	California
TOTAL, 1958	47,730,916	27,066,799	10,705,066	2,910,589	7,424,925	95,838,295	TOTAL, 1958
1959							1959
Alaska	20,010,000	6,298,000	1,219,000	1,291,000	121,000	28,939,000	Alaska
British Columbia	16,198,756	9,314,469	4,795,238	181,058	511,772	31,001,293	British Columbia
Puget Sound & Wash. Coast	12,452,275	3,431,266	5,735,643	2,042,604	690,995	24,352,783	Puget Sound & Wash. Coast
Columbia Riv. & Ore. Coast	140,000	59,000	400,000	1,000	795,000	1,395,000	Columbia Riv. & Ore. Coast
California	190,000	182,000	1,342,000	104,000	3,812,000	5,630,000	California
TOTAL, 1959	48,991,031	19,284,735	13,491,881	3,619,662	5,930,767	91,318,076	TOTAL, 1959
1960							1960
Alaska	16,867,000	6,053,000	1,564,000	1,584,000	7,000	26,075,000	Alaska
British Columbia	15,770,489	11,048,091	5,164,924	642,328	704,097	33,329,929	British Columbia
Puget Sound & Wash. Coast	13,105,000	3,195,000	1,830,000	3,372,000	808,000	22,310,000	Puget Sound & Wash. Coast
Columbia Riv. & Ore. Coast	135,365	686,551	1,766,000	83,500	370,138	3,041,554	Columbia Riv. & Ore. Coast
California	---	600,000	1,500,000	250,000	421,446	2,771,446	California
TOTAL, 1960	45,877,854	21,582,642	11,824,924	5,931,828	2,310,681	87,527,929	TOTAL, 1960
1961							1961
Alaska	22,776,000	7,160,000	655,000	1,170,000	236,000	21,997,000	Alaska
British Columbia	18,110,400	13,899,740	4,471,445	334,052	1,093,376	37,909,013	British Columbia
Washington	9,917,000	3,750,000	3,822,503	1,709,000	485,190	19,683,693	Washington
Oregon	203,819	866,044	1,452,120	128,240	329,179	2,979,402	Oregon
California	5,000	444,000	830,000	61,000	3,012,000	4,352,000	California
TOTAL, 1961	51,012,219	26,119,784	11,231,068	3,402,292	5,155,745	96,921,108	TOTAL, 1961

NOTE: Since 1942 Steelheads have been combined with salmon. Figures given in this column cover the quantities of frozen fillets of all varieties of fish reported. British Columbia figures include only amounts directly reported by owners of the fish and do not include unreported quantities in custom freezers. Data cover food fish only and do not include fish frozen for bait or animal food, nor for subsequent canning. Halibut flitches are reported under fillets.

MILD CURE

Recovers Strongly

- Mild curing of salmon swung back strongly in 1961 from the all-time low registered in 1960.

Recovery was supported in large degree by the strong run of Silvers, and fell far short of the recent record of 11,238 tierces set in 1955, but the 8,009 production of 1961 must be rated respectable nevertheless.

Three features marked the season's mild curing for the Pacific Coast as a whole:

1. Substantial contribution of the Yukon, made possible by revised regulations for the fishery on that great river, and achieved in spite of a lack of cold storage facilities in that far-northern, far-western region.

2. The strong run of Silvers which made this species available in abundance in waters of the Pacific Northwest and British Columbia, and to somewhat lesser extent to trollers working from Southeast Alaska ports.

3. Strong recovery of the fishery and mild curing interest in California, where the pack for 1961 ran more than three times that of the previous year.

- While ocean trolling for Kings or Chinooks was better in California and Pacific Northwest waters than the year before, conditions continued discouraging with respect to this species and it must be acknowledged that the fairly substantial pack of Kings recorded for Alaska in 1961 was due in a considerable degree to the resources of the Yukon River being made available by an effective revision in the Alaska state fishery regulations.

Consistent decline of the overall catch of Chinook salmon available to the trollers of the areas customarily depended upon to produce the pack of mild cured salmon in 1961 led to two distinct movements seeking to counter this trend. These, briefly, were:

1. Extension of mild curing to areas which have not in the past contributed fully to the production of mild cure—notably the Yukon and Kuskokwim Rivers, falling into Bering Sea. These streams support substantial runs of Chinooks and, in the favorable regulatory climate expected under the State of Alaska fishery regulations may be expected to yield more importantly than in 1961—providing always that some agency, private industry or federal Bureau of Indian Affairs, makes cold storage facilities available.

A cold storage in the high sub-Arctic may sound mildly ridiculous, but it is vital nevertheless if the Yukon and Kuskokwim are to achieve their full contribution to the economy of Far Western Alaska.

2. An effort to secure a larger spawning population of Fall Chinooks for the Columbia River, parent stream

1961-MILD CURED SALMON

COMPANY	Tierces, 825 lbs. net	
	King	Silver
ALASKA:		
Alaska Coast Fisheries	158	5
Booth Fisheries Corp.	20	--
Engstrom Bros.	25	--
Halibut Producers Cooperative	585	--
Ketchikan Cold Storage	20	--
McCallum-Legaz Fish Co.	192	--
New England Fish Co.	76	--
Northern Products Corp.	204	39
Pick-Shapiro Fisheries	16	--
Sitka Cold Storage	54	12
Vita Food Products	333	87
Wrangell Cold Storage	192	121
Yukon Operations	500	--
TOTAL ALASKA	2,375	264
BRITISH COLUMBIA:		
British Columbia Packers	89	25
Canadian Fishing Co.	40	--
Prince Rupert Fishermen's Coop.	93	--
Other Packers	187	61
TOTAL BRITISH COLUMBIA	409	86
PUGET SOUND:		
Booth Fisheries Corp.	204	3
Everett Fish Co.	(a) 6	--
McCallum-Legaz Fish Co.	245	--
New England Fish Co.	80	8
San Juan Fishing & Packing Co.	175	130
Seaport Fish Co.	631	(b) 61
Washington Fish & Oyster Co.	264	65
Whiz-Eardley Fisheries	314	115
TOTAL PUGET SOUND	1,919	382
OREGON:		
Portland Fish Co.	58	--
Other Packers	50	--
TOTAL OREGON	108	--
CALIFORNIA:		
Halibut Producers Cooperative	264	--
Other Packers	2,202	--
TOTAL CALIFORNIA	2,466	--
TOTAL PACIFIC COAST	7,277	732
TOTAL BOTH SPECIES	8,009	

(a) Also cured 8 tierces of Falls.

(b) Also cured 42 tierces of Falls.

of a large proportion of the Chinook salmon taken at sea by trollers from northern California to northern British Columbia. This undertaking was launched before the Pacific Marine Fisheries Commission in December, 1961, primarily with the sponsorship of the Oregon Fish Commission, which sought a month's extension of the closed season for Chinook trolling. While this reduction in fishing period failed of acceptance, the commission did enact a significant resolution directed at increased international cooperation in studying effective means of conservation for species of salmon subject to high seas fishing by means of trolls.

● Thus the commission moved to "contact the United States Department of State for the purpose of negotiating with the government of Canada to create an International King and Silver Salmon Committee, similar to the International Trawl Committee, that would be charged with co-

PACIFIC MILD CURED SALMON PACK

(IN TIERCES OF 825 LBS. NET WEIGHT)

YEAR	Alaska	British Columbia	Puget Sound	Columbia River	Oregon Coast	California Coast	Sacramento River	Kamchatka	Recapitulation		ANNUAL TOTALS	YEAR
									Kings	Silvers		
1900	. . .	. . .	. . .	1,275	. . .	. . .	950	. . .		. . .	2,225	1900
1901	67	. . .	600	3,000	. . .	. . .	3,100	. . .		. . .	6,767	1901
1902	67	. . .	425	4,213	188	504	2,325	. . .		. . .	7,722	1902
1903	8	. . .	824	6,725	. . .	354	3,600	. . .		. . .	11,511	1903
1904	34	. . .	1,250	9,088	. . .	448	4,719	. . .		. . .	15,539	1904
1905	189	1,175	3,000	9,805	415	310	2,979	. . .		. . .	17,873	1905
1906	1,126	957	. . .	8,000	740	685	2,177	. . .		. . .	13,685	1906
1907	1,657	1,993	2,060	6,070	860	722	4,102	. . .		. . .	17,464	1907
1908	1,378	1,060	. . .	4,960	. . .	252	3,243	. . .		. . .	10,893	1908
1909	2,292	1,560	2,109	5,540	664	991	5,111	. . .		. . .	18,267	1909
1910	3,357	1,638	2,435	7,922	1,465	75	5,516	. . .		. . .	22,408	1910
1911	3,164	2,005	2,745	8,185	1,377	770	2,011	. . .		. . .	19,758	1911
1912	5,245	1,380	3,013	5,824	3,479	100	3,274	. . .		. . .	22,315	1912
1913	7,440	2,125	3,631	5,746	2,681	550	4,789	. . .		. . .	26,952	1913
1914	3,872	3,182	1,934	5,205	457	1,476	1,829	. . .		. . .	17,955	1914
1915	2,966	1,119	2,235	4,078	333	945	1,630	. . .		. . .	13,306	1915
1916	4,475	767	1,755	4,656	194	1,069	650	. . .		. . .	13,566	1916
1917	2,955	429	1,063	1,886	. . .	300	1,508	. . .		. . .	8,181	1917
1918	4,234	729	1,093	1,804	275	721	1,913	. . .		. . .	9,869	1918
1919	6,803	1,173	2,423	3,328	148	2,381	2,355	. . .		. . .	18,611	1919
1920	2,770	1,116	2,036	2,275	102	1,793	1,345	. . .		. . .	11,437	1920
1921	3,966	1,076	4,517	3,051	160	1,251	812	. . .		. . .	14,833	1921
1922	5,158	2,253	4,727	1,621	162	550	1,195	. . .		. . .	15,666	1922
1923	4,075	1,819	5,799	1,769	176	1,229	606	. . .	15,129	344	15,473	1923
1924	6,069	2,969	6,409	2,320	286	2,624	1,291	. . .	21,476	492	21,968	1924
1925	7,119	3,098	5,600	2,746	547	2,241	1,523	500	22,530	844	23,374	1925
1926	5,781	2,183	4,087	1,055	1,205	929	1,767	650	16,585	1,072	17,657	1926
1927	8,982	2,689	5,160	951	918	927	1,125	854	19,390	2,216	21,606	1927
1928	5,784	2,676	4,304	1,305	2,163	1,686	179	783	14,051	4,046	18,880	1928
1929	5,477	3,016	4,311	1,969	1,787	1,160	155	1,083	15,749	3,209	18,958	1929
1930	5,331	2,630	4,361	1,068	102	1,184	124	2,144	16,049	895	16,944	1930
1931	4,123	1,083	5,700	1,251	372	1,027	164	712	13,862	570	14,432	1931
1932	5,560	1,542	3,650	2,012	1,119	752	294	640	13,443	2,126	15,569	1932
1933	4,852	3,097	3,527	2,431	660	1,392	37	340	15,295	1,041	16,336	1933
1934	4,908	4,657	3,882	1,855	270	1,572	5	776	16,960	965	17,925	1934
1935	5,487	2,665	3,563	1,730	210	2,090	439	670	15,450	1,404	16,854	1935
1936	5,222	1,642	4,897	1,138	68	1,939	366	840	15,611	495	16,106	1936
1937	6,373	4,055	2,775	604	. . .	1,026	49	778	15,552	108	15,660	1937
1938	7,786	3,128	3,657	1,292	387	627	945	787	16,451	2,158	18,609	1938
1939	7,724	2,802	2,937	501	20	417	119	600	14,905	224	15,129	1939
1940	5,210	693	3,531	33	. . .	711	308	11	10,283	714	10,497	1940
1941	8,862	1,474	3,561	229	. . .	360	15	. . .	14,174	302	14,501	1941
1942	6,748	1,055	2,494	20	. . .	. . .	. . .	. . .	10,241	76	10,317	1942
1943	3,869	811	1,022	21	. . .	166	. . .	. . .	5,278	611	5,889	1943
1944	3,518	2,019	959	16	. . .	1,259	1,329	. . .	7,969	*1,050	9,100	1944
1945	7,763	1,209	1,790	159	. . .	*1,065	1,570	. . .	10,843	*3,200	13,556	1945
1946	6,824	1,975	2,170	96	. . .	. . .	§2,764	. . .	13,216	613	13,829	1946
1947	5,919	1,675	2,129	99	. . .	§	919	. . .	10,631	110	10,741	1947
1948	5,076	1,025	2,282	77	. . .	. . .	. . .	. . .	8,490	36	8,456	1948
1949	4,449	1,177	2,049	86	. . .	891	. . .	. . .	8,625	27	8,652	1949
1950	4,809	889	3,264	90	. . .	1,214	. . .	. . .	10,109	157	10,266	1950
1951	4,671	897	2,436	20	. . .	1,200	. . .	. . .	9,150	74	9,224	1951
1952	3,189	752	2,318	4	. . .	493	. . .	. . .	7,052	. . .	7,052	1952
1953	4,484	742	2,688	30	. . .	1,033	. . .	. . .	9,209	75	8,977	1953
1954	4,003	645	2,155	. . .	. . .	1,010	. . .	. . .	7,500	313	7,813	1954
1955	3,375	678	2,796	189	. . .	4,200	. . .	. . .	11,238	**	11,238	1955
1956	2,002	688	2,267	131	. . .	2,075	. . .	. . .	7,416	***	7,163	1956
1957	2,385	533	2,374	97	. . .	456	. . .	Falls	5,845	***	5,845	1957
1958	3,749	760	3,240	209	. . .	845	. . .	169	6,866	1,768	8,803	1958
1959	3,658	608	1,517	. . .	. . .	2,547	. . .	. . .	8,245	85	8,330	1959
1960	2,028	370	1,712	. . .	. . .	754	. . .	. . .	4,269	595	4,864	1960
1961	2,639	495	2,301	108	. . .	2,466	. . .	. . .	7,277	732	8,009	1961

NOTE: Mild cured Falls not included in table, but 1960 pack of 120 tierces of this salmon was among the largest on record. *Estimated segregation. In 1945 the Silver category includes 200 tierces of Sockeyes. **Species segregation not available. ***Approximately 100 tierces of Slivers included with Kings. §Segregation as to district not available.

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ordinating international King and Silver salmon research, and the recommending of such regulations of the international King and Silver salmon ocean fisheries as may be deemed necessary."

This proposal does not contemplate an international treaty such as those under which the two nations' Sockeye salmon and halibut fisheries are conserved and regulated; but it would give official sanction to coordinated international research and regulatory recommendations based on its results.

Thoughtful students of the Chinook and Silver salmon resources of the Pacific Northwest states are inclined to believe that only by some such international agency and study will it be possible to achieve effective spawning for these species, subject as they are to intensive sport and commercial fisheries at sea and in the spawning streams as well.

- Exceptional attention to Silvers—resulting in part at least from exceptional availability of this species—marked Pacific salmon mild curing in the 1961 season.

With a pack running above 730 tierces of Silvers, the season's production was the largest since 1958 packed some 1,768 tierces; and before that back to the big pack of Silvers split in 1945, when the end of World War II gave special inducement to curing after years of scant supplies.

The 1961 pack of this species was possible only because of the recovery which Silvers made in the past year. Where in most recent seasons the runs of Silvers available to the commercial fishermen were very light, in 1961 there was an amazing up-swing of excellent fish.

Coming at a time when the trade was interested in expanding its inventory, even after an improved pack of Kings, the Silvers proved to be of real interest.

The pack of Silvers was largely cured on Puget Sound, although a substantial quantity was put up by one operator in Southeast Alaska.

- Alaska's Department of Fish and Game, moving firmly to encourage utilization of the state's salmon resources, early in 1961 provided regulatory treatment for the Yukon King salmon fishery designed to help the economy of that district of Alaska by stimulating the mild curing of these fish.

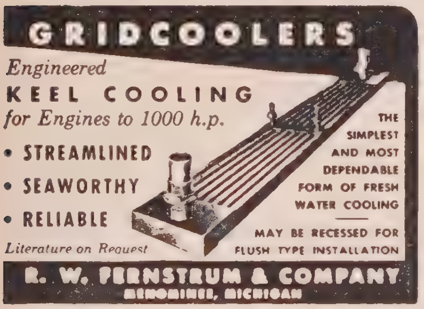
Along with the regulatory assistance went improved facilities which have been provided in recent years. This was done by removing the quota from the King salmon catch below Kako Creek. Fishing was on the basis of four days a week.

Mild curing was also encouraged on the Kuskokwim River by removing the quota from the King salmon catch in the lower reaches of the main river.

The result of these actions to encourage mild curing was readily apparent in the first season, when more than 500 tierces of Kings were put up on the Yukon River alone.

- Continued contribution of mild cured salmon to the economy of the remote Alaska regions at Port Moller, Yukon River, Kuskokwim River, and perhaps the Nushagak River will depend on several factors in addition to the helpful attitude manifest by the ADF&G.

Adequate facilities are needed to protect the quality of the goods. Transportation on Bering Sea outside of Bristol Bay is always more or less of a problem. The resident fishermen, with the catch quotas lifted and the market established, have an excellent opportunity for continuous economic support from the King salmon resource—provided they care for the fish properly and recognize that rough handling or neglect can degrade the finest salmon.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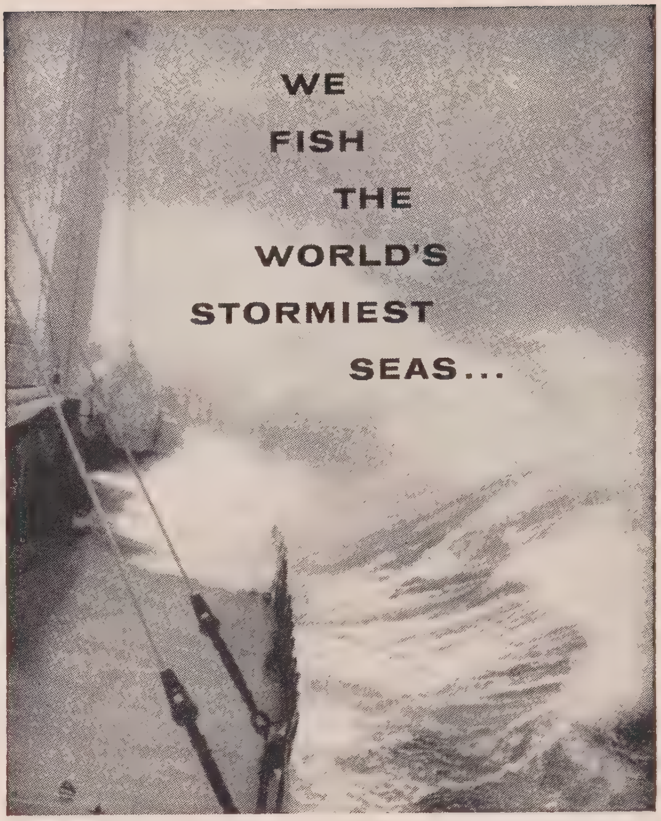

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CRAB

King Crab Reigns

- Alaska's King crab business rocketed to new highs in 1961, and turned into 1962 at a pace and with a program which virtually assured yet bigger things for *that* year.

Canned King crab packed by American firms exceeded 154,000 cases of 48 halves; being almost three times as great as the Dungeness crab canning of Alaska, Washington and Oregon combined.

Dollar value of the Alaska canned King crab alone is figured at $4,935,328; to which must be added another three-quarter million for Alaska's canned Dungeness crab.

These value data are for the *canned* product only. They do not include frozen King crab, which perhaps would add another $2,000,000 to the wholesale market value of Alaska King crab.

With King crab leading the way, Pacific crab canning has become big business. The calculated wholesale market value of the canned pack, both varieties, in 1961 reached $6,575,000. This figure of course does not take into consideration the value of fresh crabs in the shell; whole frozen eviscerated Dungeness crab; and the 2,000,000 lbs. or more of King crab legs and sections marketed frozen in the shell.

- King crabbing is a *growth* industry whose expansion continued into 1962 at an ever-accelerating pace. Number of canning operations is expected nearly to double during the current year, although obviously not all operations will be as large as the dominant half-dozen of 1961.

Looking into 1962, several developments seem certain:

1. *Japanese fleets*—two of them at least—will be operating south and east of the Aleutians and the Alaska Peninsula, in areas where American industry has been fishing King crab heavily, probably approaching the point of maximum sustainable yield.
2. *There is a growing trend* in King crab canning to freeze the picked crabmeat on the fishing grounds by specialized methods for subsequent canning in shore plants at point where facilities and cannery workers are adequate and productive, and in the size and style specified in market orders—in short, packed-to-order. This method of operation was inaugurated by one

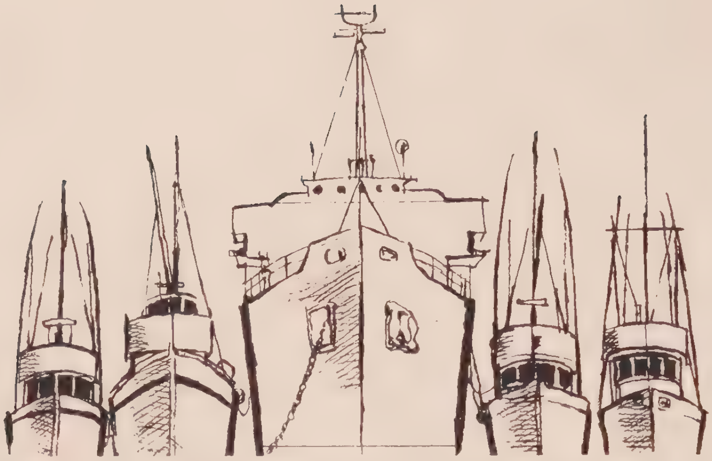
Pacific Canned Crab

(Shown in Standard Cases of 48 half-pound Cans)

YEAR	Alaska	Washington	Oregon	California	American Total		British Columbia	North American Total	YEAR
					Cases	Value			
1961	181,038**	17,013	13,338	. . .	211,389	$ 6,575,717	N.A.	211,389	1961
1960	116,000	28,154	6,255*	. . .	204,651	5,144,785	28,918	233,569	1960
1959	70,907	29,149	9,835*	. . .	109,891	2,714,962	14,495	124,386	1959
1958	48,494	52,429	11,653*	. . .	112,576	2,473,526	13,369	125,945	1958
1957	49,361	45,970	10,818	303	106,552	2,360,644	9,954	116,506	1957
1956	41,300	32,512	9,904	660	84,376	1,988,351	11,871	96,247	1956
1955	24,534	9,450	2,959	156	37,099	972,610	7,942	45,041	1955
1954	41,642	36,141	24,717	362	102,862	2,618,464	9,717	112,579	1954
1953	21,026	15,482	7,898	146	44,552	1,303,606	5,037	49,589	1953
1952	22,647	9,076	9,624	237	41,584	1,173,211	5,148	41,584	1952
1951	26,753	19,885	39,878	1,500	88,016	2,332,424	4,159	88,016	1951
1950	25,927	23,270	28,075	1,260	78,532	1,868,680	7,283	85,815	1950
1949	13,198	65,004	36,652	. . .	114,854	2,547,765	4,839	119,693	1949
1948	26,076	104,362	56,982	3,500	187,420	4,264,622	3,500	190,920	1948
1947	10,158	54,756	34,582	6,624	106,120	2,037,904	2,481	108,601	1947
1946	15,792	19,263	29,106	15,194	79,356	2,271,965	1,455	80,811	1946
1945	15,760	9,070	896	.	25,726	398,898	. . .	25,726	1945
1944	13,376	16,524	10,968	. . .	40,868	653,888	385	41,253	1944
1943	9,386	18,332	20,874	. . .	48,592	782,173	. . .	48,592	1943
1942	7,766	26,052	45,338	. . .	79,156	1,266,496	885	80,041	1942
1941	11,126	13,232	13,346	. .	37,704	311,822	3,386	41,090	1941
1940	12,828	8,634	3,792	. . .	25,254	178,021	3,794	29,048	1940
1939	11,978	2,716	8,406	. . .	23,100	184,254	2,049	25,149	1939
1938	. . .	. . . .	. . .	. . .	27,016	258,375	2,157	29,173	1938
1937	. . .	. . . .	. . .	. . .	27,394	269,699	1,546	28,940	1937
1936	. . .	. . . .	. . .	. . .	14,758	124,925	. . .	14,758	1936
1935	. . .	. . . .	. . .	. . .	13,840	106,832	. . .	13,840	1935
1934	. . .	. . . .	. . .	. . .	22,869	184,052	. . .	22,869	1934
1933	. . .	. . . .	. . .	. . .	17,564	134,330	. . .	17,564	1933
1932	. . .	. . . .	. . .	. . .	9,314	73,112	. .	9,314	1932
1931	. . .	. . . .	. . .	. . .	263	2,104	. . .	263	1931

*Includes small amount packed in California.

**Includes 154,229 cases of King Crab and 26,809 cases of Dungeness Crab.



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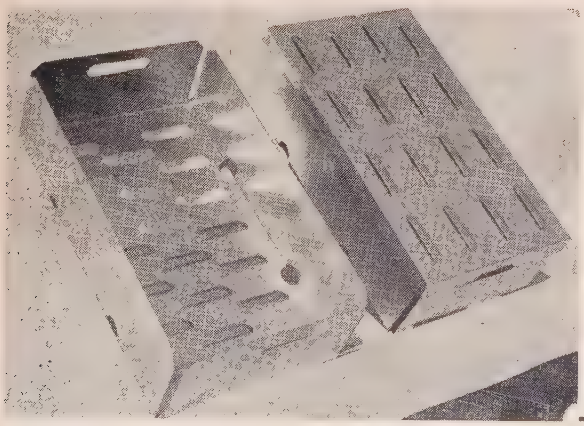

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important American operator in 1961; while much of the King crab frozen by the Japanese expeditions to eastern Bering Sea during the fall of 1961 was sold frozen to France and Belgium for subsequent canning there.

3. *There will be further extension* of American King crab operations in Southeast Alaska. While there will be some canning in this area, it is probable that the great majority of the catch will be frozen for shipment, much of it in the shell.

- At the onset of 1962 it was indicated that there would be two additional American operations of substantial character active in the Central Alaska King crab industry.

These were reported to be the Seldovia operation of Alaska Year-Round Canneries Co., Fidalgo Island Packing Co. and Whitney & Co.; and the Bendiksen-Ouzinkie operation based on the Ouzinkie Packing Co. cannery at that point.

In addition, it was reported that the Nelson Crab & Oyster Co. floating plant *Nelco* had been chartered by one of the larger canners already in the field for extension of its King crab operations.

- King crabbing in Southeast Alaska was pioneered early in 1961 by Norman Holm, working several vessels out of Juneau. His product was shipped to Seattle frozen for distribution.

Other operators entered the field briskly and by the end of 1961 there were 12 vessels known to be fishing King crab out of Southeast Alaska ports, delivering to at least five operators. All of these activities were on a relatively limited scale in contrast with those around Kodiak Island, the Shumagins and the Alaska Peninsula.

Counted as active in 1962 King crabbing — sometimes in conjunction with Dungeness crabs and shrimp also —were:

Norman Holm at Juneau;
Kayler-Dahl Fish Co. at Petersburg;
Pacific American Fisheries, Inc., at Petersburg;
Coastal Glacier Seafoods at Hoonah;
William Smith Co. at Juneau.

The latter two named are believed to be the only operations engaged in canning during 1961.

- Progress of canned King crab operations in Alaska since the inception of packing in 1951 continues to show remarkable and consistent growth, as disclosed by the following figures, those for former years having been corrected according to the statistical records of the U. S. Bureau of Commercial Fisheries.

Washington Crab Landings

YEAR	Puget Sound Pounds*	Grays Harbor Pounds**	Willapa Harbor Pounds**	Columbia River Pounds**	TOTAL POUNDS
1936	441,892	451,890	865,194	....	1,758,976
1937	500,104	643,234	1,441,352	3,428	2,588,118
1938	521,180	387,728	1,831,716	....	2,740,624
1939	441,122	620,004	2,153,496	....	3,214,622
1940	428,692	1,134,182	3,341,754	....	4,904,628
1941	514,184	1,293,222	3,968,152	206,984	5,982,542
1942	989,186	2,262,696	2,134,818	249,304	5,636,004
1943	1,267,024	2,732,090	1,052,550	56,660	5,108,324
1944	1,790,118	2,622,316	1,529,196	83,326	6,024,956
1945	1,993,398	1,961,978	1,439,204	4,838	5,399,418
1946	2,284,810	3,674,536	2,022,004	121,335	8,102,685
1947	1,512,808	6,599,380	3,822,288	38,184	11,972,660
1948	1,933,426	9,080,584	4,241,256	614,184	15,869,450
1949	1,355,148	7,633,157	3,204,240	950,006	13,142,551
1950	2,373,316	2,171,072	1,427,042	399,440	6,371,166
1951	1,547,502	1,321,400	1,806,096	154,970	4,829,968
1952	915,807	1,373,708	1,892,842	82,580	4,264,937
1953	1,190,186	2,700,206	3,035,435	78,263	7,004,090
1954	1,667,085	3,099,287	3,356,879	191,177	8,314,428
1955	1,212,743	3,269,131	2,457,479	209,871	7,149,224
1956	597,067	3,832,842	4,082,936	329,386	8,842,231
1957	331,061	7,174,757	3,196,881	386,931	11,089,630
1958	466,826	7,473,607	3,300,403	691,725	11,932,561
1959	568,376	4,900,608	2,446,493	341,602	8,257,079
1960	1,141,861	3,286,508	2,222,101	600,344	7,250,814
1961	1,504,781	3,211,354	1,912,222	345,153	6,973,510

*Conversion 22 lbs. per dozen. **Conversion 24 lbs. per dozen.

NOTE: 1961 Puget Sound figures are incomplete but include best available estimates to Dec. 31, 1961.

1961 - Pacific Canned Crab

COMPANY	Cannery Location	Cases, basis 48 halves
ALASKA		
KING CRAB:		
Alaska King Crab Co.	Kodiak	27,588
Alaska Packers Association	Kodiak Island	4,182
Aleutian Development Co.	Unalaska	100
Coastal Glacier Seafoods	Hoonah	122
King Crab, Inc.	Kodiak	28,259
Pan-Alaska Fisheries, Inc.	Seattle	32,252
Pacific American Fisheries, Inc.	King Cove, Alitak, Shumagin	57,363
Point Chehalis Packers	Cordova	2,863
William Smith Co.	Wrangell, Juneau, Tenakee	1,500
TOTAL KING CRAB, Alaska		154,229
DUNGENESS CRAB:		
Alaskan Glacier Seafood Co.	Petersburg	2,400
Big Point Seafood Co.	Big Point	25
Coastal Glacier Seafoods	Hoonah	859
Ekren Packing Co.	Kasitsna Bay	28
Peril Strait Packing Co.	Sitka	500
Thompson, N. E.	Kake	1,500
Point Chehalis Packers	Cordova	13,923
Totem Sea Foods	Tenakee Springs	1,574
Western Fisheries Co.	Cordova	2,000
William Smith Company	Wrangell, Tenakee, Juneau	4,000
TOTAL DUNGENESS CRAB, Alaska		26,809
WASHINGTON and OREGON		
DUNGENESS CRAB:		
Chinook Packing Co.	Chinook, Wash.	22
Crown Packers, Inc.	Hoquiam, Wash.	1,405
Harbor Seafoods, Inc.	Bay Center, Wash.	220
Nelson Crab & Oyster Co.	Tokeland, Wash.	10,200*
Point Adams Packing Co.	Hammond, Ore.	13,338
Point Chehalis Packers	Westport, Wash.	4,916
Washington Crab Producers Ass'n.	Westport, Wash.	250
TOTAL WASHINGTON and OREGON		30,351
TOTAL DUNGENESS CRAB		57,160
TOTAL KING CRAB		154,229
GRAND TOTAL		211,389

NOTE: Virtually all canned crab is now marketed in cases of 24 cans. However, data here are presented in U. S. standard cases of 48 half-pound cans. Minor quantities packed in 1-lb. and 1/4-lb. cans have been brought to the standard of 48 halves for statistical purposes.

* Partly estimated.

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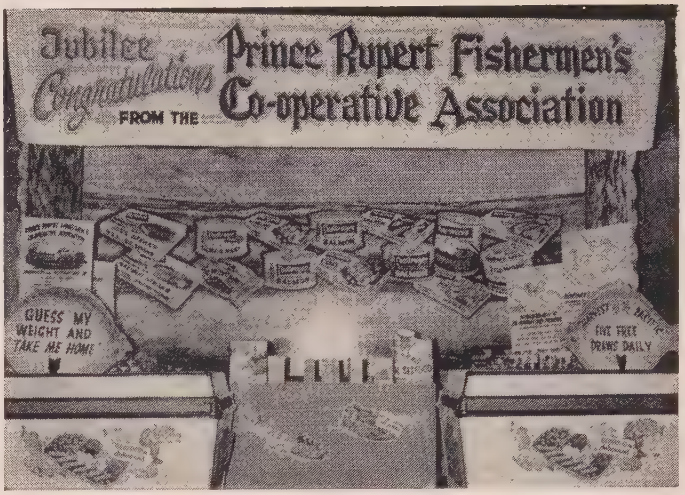
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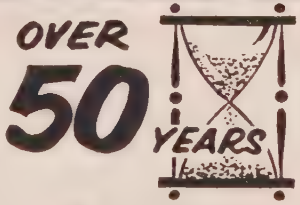

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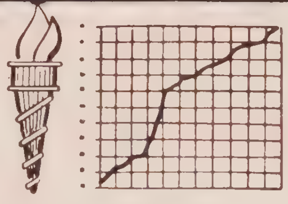

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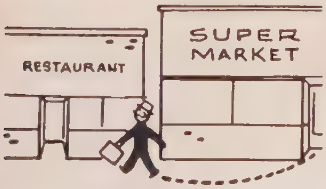

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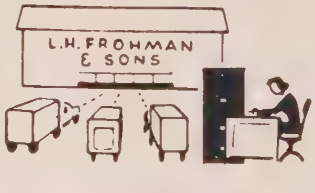

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ALASKA CANNED KING CRAB

Year	Standard Cases	Value
1951	56	$ 1,344
1952	6,293	254,598
1953	6,479	210,845
1954	35,017	1,014,753
1955	17,986	483,320
1956	37,300	1,002,251
1957	45,196	1,169,483
1958	45,042	1,079,019
1959	55,316	1,437,890
1960	100,000	2,800,000
1961	154,229	4,935,328

● Alaska King crab was priced high in 1961 in terms of lives and boats.

Violent weather, both spring and fall, cost the lives of 13 fishermen during the year; and the tally of boats destroyed was nine.

Fishing was good in the closing months of 1961 and the fishermen pressed their craft to the limit—and sometimes beyond.

What was considered an all-time record for a King crab trip was established in December, 1961, when Gordon Nelson brought his *Nautilus* into Port Wakefield with 10,000 live King crabs aboard.

Ruth L., one of the boats lost without a trace in the late fall of 1961, was regarded as the high-boat of the fleet, having delivered approximately 1,750,000 lbs. of crabs in that year to the date of her disappearance.

Dungeness Crab

● Dungeness crab canning recovered strongly in 1961, particularly in Alaska, with the pack for the year on the Pacific Coast almost doubling that of 1960.

The gain was largely in Alaska, production in 1961 in Washington and Oregon gaining but narrowly over the year before, when the canned production was held down firmly by the strong demand for fresh and frozen crabmeat; as well as by the caution of canners who had been burned by high-priced crabs before.

This predilection for frozen crabmeat over the canned product, due primarily to the high price of crabs and the uncertainties of the long-term commitment involved in canning, continued to shape the Pacific Northwest crab business in 1961.

Removed from the more volatile aspects of the shipping market, Alaska crab canners felt some release in 1961 and got up a much larger pack of Dungeness than in the previous year.

● With the opening of crab fishing in the Pacific Northwest at the end of 1961 and in early 1962 the emphasis more than ever before was on fresh crab and frozen crabmeat. The Century 21 World Fair in Seattle, due to open in April, 1962, was counted upon to produce a special demand for crab in the seafood restaurants and this produced a strong demand for frozen crabmeat which could be counted upon to supplement the fresh supply during the exposition.

The wave of enthusiasm for crab actually swept northward up the coast. The Oregon buyers, stimulated by this prospect and a good early demand in California opened at 14¢, but went up to 16¢ before January was many days old.

This was under the stimulus of fishermen's threats and bad weather; but the 16¢ figure quickly was met all the way to Grays Harbor by mid-January and the year seemed committed to high priced crab on the strength generated by the prospective market built on the world fair forecasts of unlimited demands for Crab Louis.

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1961 Pacific Frozen Shellfish

COMPANY	LOCATION	Dungeness Crabmeat lbs.	King Crabmeat lbs.	Crab in Shell lbs.	Shrimp Meat lbs.	Clams Shucked lbs.	Oysters Shucked lbs.	TOTAL lbs.
ALASKA								
Alaska King Crab Co.	Kodiak, Alaska	---	150,600	82,800	---	---	---	233,400
Alaskan Glacier Sea Food Co.	Petersburg, Alaska	105,000	---	---	170,000	---	---	275,000
Aleutian Cold Storage Co.	Sand Point, Alaska	---	214,510	684,027	---	---	---	898,537
Big Point Seafood Co.	Big Point, Alaska	---	---	---	---	150	---	150
Coastal Glacier Seafoods	Hoonah, Alaska	181,854	---	26,928	---	---	---	208,782
Halibut Producers Co-op.	All Stations	300,000	25,000	260,000	39,000	---	---	624,000
Kayler-Dahl Fish Co.	Petersburg, Alaska	---	20,035	1,906	53,623	---	---	75,564
King Crab, Inc.	Kodiak, Alaska	---	474,759	268,718	---	---	---	743,477
Peril Strait Packing Co.	Sitka, Alaska	500	---	5,000	---	---	---	5,500
Point Chehalis Packers, Inc.	Cordova, Alaska	86,045	1,879	164,105	---	---	---	252,029
Wakefield Fisheries, Inc.	Port Wakefield, Seldovia, Sand Point, Alaska	---	2,000,000	1,000,000	---	---	---	3,000,000
TOTAL		673,399	2,886,783	2,493,484	262,623	150	---	6,316,439
BRITISH COLUMBIA								
British Columbia Packers, Ltd.	All Stations	5,770	---	5,424	36,302	---	97,116	144,612
Canadian Fishing Co., Ltd.	All Stations	628	---	1,452	24,686	---	12,917	39,683
Prince Rupert Fishermen's Co-op. Ass'n.	All Stations	---	---	420,000	---	---	---	420,000
TOTAL		6,398	---	426,876	60,988	---	110,033	604,295
WASHINGTON								
Booth Fisheries Corp.	Seattle, Wash.	1,470	---	1,154	---	---	111,948	114,572
Chinook Packing Co.	Chinook, Wash.	35,388	---	35,284	---	---	---	70,672
Coast Oyster Co.	South Bend, Wash.	---	---	---	---	---	1,215,856	1,215,856
Everett Fish Co.	Everett, Wash.	4,000	---	7,000	---	---	---	11,000
Harbor Seafoods, Inc.	Bay Center, Wash.	25,000	---	100,000	---	---	---	125,000
Main Fish Co., Inc.	Seattle, Wash.	---	---	---	---	14,000	---	14,000
Northern Oyster Co.	Oysterville, Wash.	---	---	---	---	---	160,000	160,000
Odion Sea Products Co.	Seattle, Wash.	25,000	---	100,000	---	---	---	125,000
Seaport Fish Co.	Seattle, Wash.	15,065	---	20,154	---	---	---	35,219
Washington Fish & Oyster Co.	Seattle, Wash.	3,610	3,825	2,626	330	---	4,452	14,843
TOTAL		109,533	3,825	266,218	330	14,000	1,492,256	1,886,162
OREGON								
Bumble Bee Seafoods	Astoria Ore.	92,041	---	---	---	---	---	92,041
New England Fish Co.	All Stations	62,000	---	18,000	---	---	---	80,000
Portland Fish Co.	Portland, Ore.	64,000	---	18,000	---	---	---	82,000
San Juan Fishing & Packing Co.	All Stations	49,000	---	88,000	---	---	---	137,000
Seaside Clam Company	Seaside, Ore.	9,687	---	4,218	9,690	7,000	---	30,595
TOTAL		276,728	---	128,218	9,690	7,000	---	421,636
CALIFORNIA								
Miscellaneous operators		523,000	---	500,000	243,000	101,000	*814,000	2,181,000
GRAND TOTAL		1,589,058	2,890,608	3,814,796	576,631	122,150	1,602,289	11,409,532

*Actually miscellaneous shellfish of various kinds, including 105,000 lbs. squid.
Not included in total of oyster column.

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PACIFIC SHRIMP

Swings Back Strongly

● North Pacific shrimp canning swung back strongly in 1961 from the deep dip it took in 1960, the 155,256 standard cases barely falling short of the 1959 record.

The gain was registered both in Alaska and in the Oregon-Washington district, but mainly in Alaska. The Pacific Northwest operations swung back, but not to levels as high as in 1958 and 1959.

Value of the 1961 pack of canned shrimp in Alaska and the Pacific Northwest is figured barely short of $2,500,000.

Recovery of the industry from the low level to which it stumbled in 1960 was due to a variety of factors:

1. Scarcity of Gulf of Mexico shrimp, which brought Pacific Ocean Pinks into better demand nationally than ever before.
2. Reduction of the inventory from previous seasons which had burdened the industry going into 1960.
3. Operating arrangements which made it possible for some canners to get their costs to levels permitting production in spite of some of the high-cost factors affecting operations in Alaska in particular.

● A new prospect for Pacific Ocean shrimp appeared in 1961, and is expected to be effective in 1962. This development stems from the enterprise of a Louisiana company in seeking supplies of small shrimp frozen in forms which can be sliced, breaded, and offered as a new shrimp specialty featuring the color and flavor of the Alaska shrimp.

The forms in which the shrimp are frozen are reported to be long tubes from which the shrimp will be released after freezing in long sticks. These have a shrimp-shaped section and the portions for breading will be sliced from the frozen sticks for breading and packaging.

Operations supplying the new demand are expected to be active in 1962 at the cold storages in Seward and Sand Point.

● North Pacific shrimp fishing operations were extended into the Bering Sea in 1961 when a Taiyo Gyogyo K.K. expedition was dispatched there under Japan Fishery Agency license to pioneer shrimp canning in those northern waters.

Results of the operation were regarded in Japan as extremely good for the first season of a new venture.

With a target of 80,000 cases, the Taiyo expedition actually packed 75,000 cases, and in addition froze a substantial quantity of shrimp.

This product mix results from early difficulties of getting the shrimp peeling machines into adjustment. For some days after operations started it was necessary to freeze the catches of the fishing vessels. Once the machines were properly adjusted to the material, canning went forward rapidly.

The vessel was equipped with machines from The Peelers Company, New Orleans. Its canning practice differed from that commonly used in Alaska, in that the shrimp were put into the peeling machines immediately upon their delivery to the mothership by the trawlers. As this never was more than a very short period, and as the water and weather both were of subarctic character, the shrimp were firm and in fine condition when they were peeled and the meats separated for canning.

1961 Pacific Canned Shrimp

COMPANY	Cannery Location	Cases, 48 Halves
Bendiksen Co., E. H.	Seward, Alaska	25,000*
	South Bend, Wash.	20,000*
Crown Packers, Inc.	Hoquiam, Wash.	7,753#
Halibut Producers Cooperative	Seward, Alaska	36,482
King Crab, Inc.	Kodiak, Alaska	29,803
Pacific Shrimp, Inc.	Warrenton, Ore.	5,410
Seaside Clam Co.	Warrenton, Ore.	4,700
Sutterlin & Wendt	Seldovia, Alaska	11,000
William Smith Company	Wrangell, Alaska	15,108
	GRAND TOTAL	155,256
	TOTAL VALUE	$2,484,096

PACIFIC SHRIMP, Previous Years	Value	Standard Cases
1960 - Alaska	$ 465,000	31,000
Washington & Oregon	462,928	27,997
TOTALS, 1960	$ 927,928	58,997
1959 - Alaska	$ 1,686,295	104,327
Washington & Oregon	1,041,389	64,817
TOTALS, 1959	$ 2,727,684	169,144
1958 - Alaska	$ 545,642	50,613
Washington & Oregon	1,666,035	94,952
TOTALS, 1958	$ 2,211,677	145,565
1957 - Alaska	$ 164,437	16,444
Washington & Oregon	512,082	32,794
TOTALS, 1957	$ 676,519	49,238

* Partly estimated. #Custom canned for others.

NOTE: Although reported here in standard cases of 48 halves, Pacific canned shrimp actually are generally marketed in cartons containing 24 half-pound cans.

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The Taiyo shrimp were given a high rating by examiners, being exceptionally firm and well-flavored, carefully graded as to size, composed of whole tails, and with meaty texture. Color was identical with that of Pacific Ocean Pinks.

• Japanese shrimp fishing for the Taiyo operation was pursued over a large area, and also at varying depths in order to determine levels and locations of greatest abundance.

The shrimp are reported to have been taken all the way from the sea bottom to its surface, and in remarkable quantities.

Although authorizations had not been issued by the Japan Fishery Agency at time of writing, there were implications that further expansion of the shrimp operation in Bering Sea could be anticipated in 1962.

• Alaska's development of its shrimp resource slowed in 1961 due to canning costs and the difficulty of meeting competitive prices. However, continued exploration developed new areas with abundant populations, and proved the enormous potential of the resource in the Gulf of Alaska and westward along the Alaska Peninsula and the Aleutian Islands.

Operators declare that sweeping expansion of the industry will follow solution of the cost problem associated with removing the shells of the small shrimp found in northern waters.

A total of over 3.2 million pounds of shrimp was caught by two shrimp trawlers, operating off Kodiak Island in the first nine months of 1961, according to records of the Alaska Department of Fish and Game. The average catch per trip for one vessel was 75,265 pounds for 23 trips, and the other vessel averaged 68,654 pounds per trip for 22 trips. One trip of 7 days yielded 102,997 pounds, or nearly 8 tons per day.

Operating out of Seward, Alaska, the two trawlers fished entirely in the Sitkalidka Straits, southeast of Kodiak Island, in 60 to 65 fathoms of water. The average drag was 30 minutes to one hour per, and each trip was about 1½ days.

The two trawlers are in the 75- to 80-foot class and all trawling was done with 57-foot Gulf of Mexico-type shrimp trawls.

• Product development for Alaska shrimp beyond the usual frozen shrimpmeat or the canned article was forecast in 1961 when Louisiana interests undertook through one of the important producing organizations the processing of the shrimp in breaded "Alaska style" for sale frozen.

This product was planned to utilize the abundant small Alaska shrimp in formed and breaded condition, thus overcoming the marketing handicap sometimes encountered by the Alaska product because of the small size of the individual shrimp meats. The product was felt by its sponsors to be appearing at a particularly opportune time because of scarcity of shrimp supplies from some of the areas producing the large shrimp for the United States market.

MEXICAN SHRIMP EXPORTS THROUGH CALIFORNIA AND ARIZONA

1960-61			
MONTH	Fresh Pounds	Frozen Pounds	Total Pounds
November 1960	14,695	9,394,924	9,427,919*
December 1960	3,217,155	3,390,376	6,607,531
January 1961	962	5,563,104	5,564,066
February 1961	--	4,462,662	4,493,861*
March 1961	--	3,902,162	3,902,162
April 1961	3,462	3,409,149	3,412,611
May 1961	--	3,314,170	3,314,170
June 1961	--	3,201,265	3,201,265
July 1961	--	1,978,800	1,979,594*
August 1961	2,195	422,959	425,154
September 1961	--	2,834,314	2,834,314
October 1961	1,100	10,164,588	10,165,688
TOTAL	3,239,569	52,038,473	55,328,335

*Includes 18,300 lbs. dried shrimp exported in November, 31,199 lbs. in February and 794 lbs. in July.

1959-60			
MONTH	Fresh Pounds	Frozen Pounds	Total Pounds
November 1959	1,327	5,393,229	5,394,556
December 1959	--	5,581,995	5,581,995
January 1960	--	3,432,149	3,432,149
February 1960	--	2,776,422	2,776,422
March 1960	279	3,319,113	3,319,392
April 1960	--	3,310,076	3,310,076
May 1960	--	3,343,363	3,343,363
June 1960	2,920	3,957,963	4,021,994*
July 1960	--	2,396,623	2,396,623
August 1960	--	231,880	231,880
September 1960	--	2,764,620	2,764,620
October 1960	--	7,227,861	7,227,861
TOTAL	4,526	43,735,294	43,800,931

*61,111 pounds canned shrimp included in June 1960 exports.

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OYSTERS

Competition Clips Canning

• Pacific oyster operations of 1961 were marked by a sharp decline in canned oyster production, with only 30,512 cases of canned Pacific oysters reported to *Pacific Fisherman International Yearbook*. This was less than half the amount of the previous year, and barely a quarter the average of years prior to 1960.

Oyster stew—canned—held up well in spite of the decline in canned oysters. Although the pack of 174,629 cases was somewhat below that of the preious year, it was well above the output of any year prior to 1960.

Fresh oyster sales were good, particularly after the oysters rounded into full condition, a status not reached until rather late in the fall of 1961.

• Reason for the rather anomalous condition of 1961 oyster operations was ascribed by spokesmen for United States Pacific oystermen primarily to imports of canned oysters, almost wholly from Japan.

At time of writing at the end of January, 1962, the average quoted price of American canned oysters was reported as $9.00 to $10.00 per case of 24 cans. Japanese canned oysters in packages of similar size were reported to be available at $5.95 per case cif., duty paid, U. S. Pacific ports.

The spread of $3 to $4 per case was cited by American producers as responsible for the sharp cut-back in Pacific oyster canning and the strong switch to fresh sales, or canning in the form of stew, a product not now being imported.

• Amount of imported oyster seed to be planted on the Pacific Coast in 1962 is expected to be curtailed somewhat as result of reduction in the amount of seed available in Japan.

This condition may be offset to some degree by seed produced in certain areas of Puget Sound — notably Depoe Bay; and in Pender Sound, British Columbia. Both of these areas reported a substantial quantity of local seed from 1961 spawning.

Advance 1962 seed orders placed through the Pacific Coast Oyster Growers Association at time of writing approximated 17,000 cases for Japanese seed; but it was questionable whether more than about 14,000 cases would be available.

Association imports in recent years have been: 1958—20,285 cases; 1959—15,083 cases; 1960—17,387 cases; 1961—12,479 cases.

• In addition to canned oysters and canned smoked oysters, imports of oysters from Japan in 1961 included some substantial quantities of frozen oysters, generally individually frozen in containers of formed plastic.

Difficulty was found by the importers in securing authority for distribution of this product frozen for consumption, due primarily to the variations in the origin and inspection requirements of a considerable number of the states.

Frozen oysters individually packed in these plastic forms were test-marketed in Great Britain during 1961, and are understood to have been quite readily received in that particular market.

• R. H. Bailey, president of the Pacific Coast Oyster Growers Association, testifying before a Congressional sub-committee in the autumn of 1961 expressed his views on several present needs of the oyster industry of Pacific North America, citing:

1. Development of improved and effective methods for oyster seed propagation and cultivation to commercial size.

2. Effective elimination of water pollution, particularly from tidal

Pacific Canned Oysters and Oyster Stew

CANNED OYSTERS (Cases of 48 cans)				SEASON	CANNED OYSTER STEW (Cases of 48 cans)		
No. 1 E.O.	"Buffet"	Other Sizes	TOTAL Basis Std. Cases	1960-61	No. 1 E.O.	"Buffet"	TOTAL Basis Std. Cases
12,766	15,623	4,619	30,512		122,577	65,064	174,629

PACIFIC CANNED OYSTERS, equivalent of standard cases of 48 No. 1 E.O. packed in -

1960	97,616	1954	100,687	1948	83,489	1942	72,315	1936	118,853
1959	125,251	1953	114,687	1947	57,205	1941	178,445	1935	88,062
1958	131,266	1952	112,415	1946	89,050	1940	148,870	1934	68,323
1957	128,493	1951	132,140	1945	3,184	1939	112,549	1933	32,315
1956	109,559	1950	120,742	1944	none	1938	111,348	1932	12,233
1955	124,497	1949	113,989	1943	583	1937	110,872	1931	7,930

PACIFIC CANNED OYSTER STEW, by seasons, basis standard cases of 48 No. 1 E.O. cans.

1960-61	197,121	1956-57	273,288		
1958-59	216,683	1955-56	182,179	1953-54	134,111
1957-58	268,907	1954-55	170,058	1952-53	78,536

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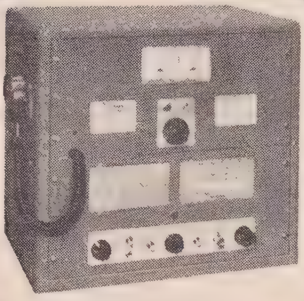

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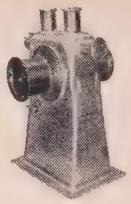
areas, and especially that resulting from the discharge of industrial wastes often toxic in character.

3. Study of means by which successful oyster spawning and setting can be induced and assured by control of temperature, water quality and food organisms.

4. Control of imports beyond that provided by the present duty which, after being paid, is reported to leave a margin of almost $4 per case between the price of a case of 24 imported cans and a similar container of domestic Pacific canned oysters—a duty which he called "completely inadequate."

5. Discovery and introduction of a species of oyster which will survive, grow and effectively propagate in Pacific Northwest waters; and which at the same time will be acceptable to the United States market fresh, frozen or canned.

● Opportunity for further development of the oyster industry on the Pacific Coast in some ways is better than ever before. This brightening results, unhappily, from the extremely adverse condidtions which have prevailed in some of the important Atlantic Coast oyster areas of the United States.



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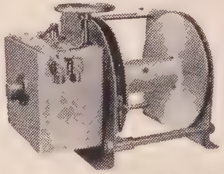

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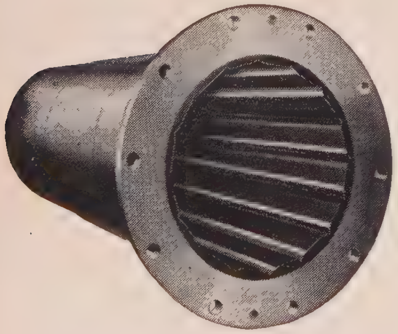

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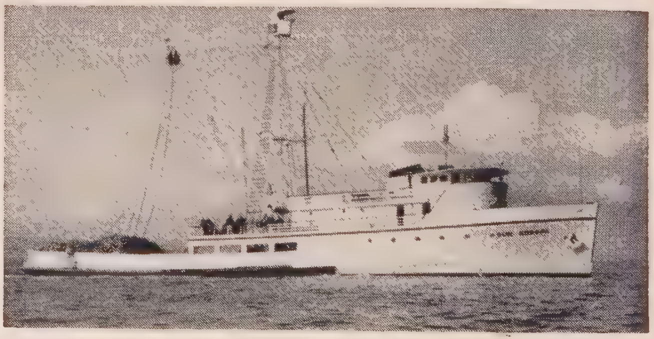

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CLAMS

Kodiak Island Ups Output

- Razor clam production of the Pacific Coast in 1961 was held close to the average of the past decade, but only through the ability of the Kodiak Island area to produce more heavily than usual, thus making up for marked falling-off in production of the Copper River area, normally the mainstay of razor clam production.

The pack of 29,985 cases of 48 halves was put up almost altogether in Alaska, with Oregon and Washington together producing only about 20% of the total.

While there is a continuing tendency for the American consumer to look to the Atlantic Coast or foreign countries for canned clams, the Razor clam, peculiar to the sandy beaches of the North American coast north and west from Oregon, remains the finest of the world's clams. Limited in supply, the Razor clam is unmatched in quality and continues to enjoy first place with the epicure.

- In an effort to provide additional supplies of mature clams from beaches where growth is slow and spawning maturity reached well in advance of former minimum size limits, the Alaska Department of Fish and Game in 1962 is providing a 4" minimum size limit in place of 4.5" in the Copper River area.

Moreover, the 1962 regulations remove the catch or pack quotas on production of razor clams in the Copper and Bering River areas.

Formerly the Copper River production has been limited to 985,000 lbs. of clams in the shell or 29,000 cases of 48 halves from January through June, with not more than 175,000 lbs. to be taken before April 15; and with 35,000 lbs. or 1,000 cases after Aug. 16.

The Bering River quota was 320,-

PACIFIC CLAM PACK IN PREVIOUS YEARS

YEAR	(Basis 48 halves per case)				YEAR	(Basis 48 halves per case)			
	RAZOR CLAMS					HARD SHELL CLAMS			
	Alaska	Wash. & Oregon	B.C.	TOTAL		Alaska	Wash.	*B.C.	TOTAL
1929	28,270	63,526	13,050	104,846	1929	....	19,514	21,547	41,061
1930	33,937	54,746	12,623	100,324	1930	600	27,735	18,738	46,073
1931	43,460	53,412	8,658	105,440	1931	2,600	19,516	18,043	40,159
1932	69,147	46,002	8,457	123,606	1932	76	13,264	9,201	22,541
1933	38,213	38,772	....	76,985	1933	....	22,438	20,432	45,163
1934	31,655	30,232	....	61,656	1934	....	25,880	11,630	37,510
1935	34,864	53,057	....	87,921	1935	....	37,249	20,418	57,667
1936	29,900	49,692	....	79,592	1936	....	45,222	25,158	70,380
1937	29,044	20,373	....	49,417	1937	....	45,788	25,174	70,962
1938	42,305	64,167	....	106,472	1938	....	40,007	44,310	84,317
1939	35,258	60,205	....	95,463	1939	....	39,165	10,862	50,027
1940	41,556	51,705	....	93,261	1940	....	35,250	7,151	42,402
1941	22,736	27,629	....	50,365	1941	....	22,380	6,772	29,152
1942	46,703	3,999	5,568	56,270	1942	....	10,972	12,240	23,212
1943	48,692	1,732	5,821	56,275	1943	2,457	2,902	11,642	§34,001
1944	47,050	3,512	**	50,562	1944	11,630	19,863	**	§71,024
1945	43,476	38,152	**	81,628	1945	6,029	11,752	4,693	22,474
1946	51,594	51,063	**	102,657	1946	14,441	20,574	23,867	98,826
1947	24,726	42,970	....	67,696	1947	323	15,301	**	15,624
1948	34,425	11,720	....	46,145	1948	92	12,600	....	12,692
1949	42,103	4,482	923	47,518	1949	125	16,449	9,794 ½	26,368 ½
1950	54,534	849	1,583	56,966	1950	....	8,919	8,456	17,375
1951	44,082	11,014	3,196	58,292	1951	15	13,981	15,460	29,456
1952	25,960	9,843	***	35,803	1952	179	§§13,544	24,592	38,315
1953	39,234	8,449	5,183	52,866	1953	164	§§13,281	19,249	32,694
1954	31,463	5,541	8,413	45,417	1954	1,634	22,336	23,717	47,687
1955	45,931	10,386	....	60,117	1955	14	24,755	6,780	31,549
1956	34,267	6,005	3,539	43,811	1956	....	§22,117	**	22,117
1957	32,716	6,054	3,076	41,846	1957	....	§27,696	**	27,696
1958	11,540	6,545	2,907	20,992	1958	....	4,634	**	4,634
1959	21,001	4,405	N.A.	25,406	1959	....	§§21,354	N.A.	21,354
1960	23,339	#	51,008	74,347	1960	....	N.A.	N.A.	28,609

§Total includes clams canned in California from clam meats produced in Mexico.

#Combined with Alaska.

§§Includes a small amount canned in California.

*British Columbia figures for years 1932 to 1947 and 1951. 1952 and 1953. include some Razor Clams. **British Columbia totals not available.

***Included with Hardshell.

NOTE: Data for current year from original sources. Data for previous years are from official sources, converted to Pacific standard cases of 48 Halves.

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000 lbs. or 8,000 cases.

Liberalization of the Razor clam restrictions is in line with the policy of the Alaska Department of Fish and Game to encourage industrial use of minor marine resources of Alaska in order to support the state's economy, where great utilization can be undertaken without damage to the natural stocks. The Razor clam regulation liberalization followed a careful specialized study of the resource and the probable effects of the new regulations on it as well as on the economy of Alaska.

- Further utilization of the Razor clam resources on beaches not at present exploited commercially is expected to follow with the Alaska trend toward economy operations on shellfish at seasons before and after the annual salmon runs.

Thus several companies now operate their canneries on King crabs or shrimp during the off-seasons for salmon in Central Alaska; and the Razor clam resources of Cook Inlet, the Alaska Peninsula, and even the Aleutian Islands, would appear to offer opportunities for further extension of enterprises of this sort.

- Razor clam production in Alaska will be freed in 1962 of quota limitation for the first time in many years. The Alaska Board of Fish and Game is abandoning the limit on production in the Copper River area.

Moreover, the minimum size limit was reduced to four inches as a means of encouraging production from areas where the clams apparently grow more slowly or do not reach the former limit of 4.5".

Former quota provisions of the regulations applicable to the Copper River district—principal source of Alaska razor clams—was: 985,000 lbs. of clams in the shell, or 29,000 cases of 48 halves from January through June, with not more than 175,000 lbs. to be taken before April 15; and 35,000 lbs. of 1,000 cases after August 16.

Bering River district—320,000 lbs., or 8,000 cases, without seasonal limitation other than the June 30-August 16 closure.

Liberalization of the Copper River area razor clam regulations in 1962 follows a specialized study of the condition of the resource; and is in line with the ADF&G policy of encouraging industrial use of minor marine resources of Alaska to support the state's economy where this can be done without sacrifice of sound conservation principles.

- British Columbia's 1961 production of fresh oysters, as officially reported early in 1962, showed a yield for the province of 85,971 gallons, marketed in containers of various sizes.

This contrasted with 78,384 gallons in the previous year.

1961 — Pacific Canned Razor Clam Pack

COMPANY	CANNERY LOCATION	1-lb. Talls, 48	No. 2 24	1/2-lb. 48	GRAND TOTAL Basis 48 Halves
Alaska Packers Association	Cordova, Alaska	---	--	5,864	5,864
	Kodiak, Alaska	---	--	17,905	17,905
Big Point Seafood Co.	Big Point, Alaska	---	25	50	100
	Cordova, Alaska	---	55	---	110
Chinook Packing Co.	Chinook, Wash.	---	--	44	44
Mohawk Packing Co.	Moclips, Wash.	2,231	--	---	4,462
Seaside Clam Co.	Seaside, Ore.	---	--	1,500	1,500
TOTAL, RAZOR CLAMS		2,231	80	25,363	29,985

WASHINGTON RAZOR CLAM PRODUCTION

YEAR	COPALIS BEACH (Pounds)			GRAYLAND BEACH (Pounds)			LONG BEACH (Pounds)			KALALOCK, etc.	Total Catch All Beaches
	# of Digs	Total Catch	Per Dig	# of Digs	Total Catch	Per Dig	# of Digs	Total Catch	Per Dig	Total Catch-Pounds	(Pounds)
1937	20,695	546,486	26.4	9,026	285,317	31.6	2,986	99,591	33.4	46,478	997,872
1938	37,064	1,366,441	36.9	20,765	882,619	42.5	9,410	364,383	38.7	44,670	2,650,355
1939	23,903	846,633	35.4	11,182	433,796	38.7	11,321	653,992	57.7	30,692	1,965,113
1940	25,343	604,338	23.8	13,582	347.435	25.5	25,115	1,159,123	46.1	14,886	2,125,782
1941	12,389	406,393	32.8	2,643	111,819	42.3	3,307	222,129	67.2	806	741,147
Reserve	7,965	347,693	43.7	...	...	...	...	...	...	...	...
1942	5,088	143,148	28.1	814	26,283	32.3	3,941	174,104	44.2	*	343,535
1943	5,284	164,907	31.2	1,005	24,728	24.1	799	20,627	25.8	*	210,262
1944	8,485	409,374	48.2	2,705	105,425	38.9	2,651	108,030	40.7	*	622,829
1945	14,519	1,124,965	77.5	5,289	512,298	96.9	4,255	418,673	98.4	1,235	2,057,171
1946	12,387	922,516	74.5	10,548	461,773	43.8	11,109	663,776	59.8	*	2,048,065
1947	16,681	1,164,321	58.5	6,564	305,122	46.5	9,105	544,657	59.7	*	2,014,100
1948	18,263	687,612	37.6	6,642	249,869	37.6	8,489	268,862	31.8	50,350	1,256,693
1949	14,496	475,649	32.8	5,412	177,227	32.7	1,220	42,169	34.5	26,686	721,731
1950	11,878	231,879	26.9	...	...	...	...	...	...	5,303	237,182
1951	14,583	700,173	48.0	...	...	...	...	...	...	...	700,173
1952	17,630	651,733	37.0	...	...	...	...	...	...	39,595	691,328
1953	13,203	504,050	38.1	...	...	...	724	60,267	83.2	28,863	593,180
1954	8,407	550,524	63.2	...	...	...	152	11,759	77.3	35,018	597,301
1955	7,859	614,061	78.1	...	...	...	224	24,666	110.0	110,682	749,409
1956	10,054	416,884	41.3	...	...	...	**	92,947	**	187,028	696,859
1957	9,180	521,603	56.8	...	...	...	658	79,814	121.3	155,796	757,213
1958	12,549	790,201	63.0	...	...	...	543	58,003	106.8	181,343	1,029,547
1959	16,924	731,936	68.5	...	...	...	655	47,693	72.8	225,336	1,004,965
1960	9,021	189,995	21.1	...	...	...	6	190	31.2	253,563	443,748
1961	7,849	259,393	33.0	...	...	...	1	36	36.0	343,138	602,567

NOTE: In 1950 the catch per dig was computed only on pounds sold, which equaled 5,205 digs for 140,017 lbs. 91,862 lbs. of the quota were not sold and the number of digs for this unsold portion does not agree with the digs and pounds sold.

*The small amount is included with Copalis Beach

**Not available.

PACIFIC COAST FISH REDUCTION PRODUCTS

Fish Oil **Fish Meal**

(Gallons)							(Tons)					
Alaska	Wash.	Oregon	Calif.	British Columbia	TOTAL	Year	Alaska	Wash.	Oregon	Calif.	British Columbia	TOTAL
232,376	116,282	20,000	26,063	...	394,721	1916	1,594	...	100	535	...	2,229
231,142	205,511	25,000	176,293	49,784	686,730	1917	1,858	3,186	190	3,481	1,220	9,935
147,716	98,711	35,200	346,724	64,060	692,411	1918	600	1,885	95	8,734	1,977	13,291
170,340	90,921	25,000	514,262	65,945	866,468	1919	1,218	1,114	350	11,153	1,847	15,682
720,118	21,850	23,175	611,585	66,802	1,443,530	1920	3,928	352	136	8,856	466	13,738
99,948	170,008	48,000	336,738	53,640	708,334	1921	678	1,354	300	6,317	489	9,138
454,938	157,555	14,000	547,050	90,553	1,264,096	1922	1,958	1,216	40	9,027	911	13,152
915,143	135,145	24,000	951,888	196,381	2,242,557	1923	3,635	992	150	9,238	823	14,838
1,193,705	79,028	42,000	2,350,722	289,651	3,955,106	1924	5,560	607	275	15,328	1,709	23,479
2,391,832	97,890	47,400	3,150,041	1,020,607	6,707,770	1925	9,302	1,395	300	22,936	4,551	38,484
3,018,675	78,352	58,000	2,123,928	2,555,485	7,834,440	1926	12,093	822	325	15,767	10,543	39,550
2,067,041	81,801	65,000	2,618,490	3,863,347	8,695,679	1927	7,704	956	500	21,374	16,659	47,193
2,585,990	79,347	54,000	3,749,302	4,877,059	11,336,698	1928	10,713	670	425	28,390	15,331	55,529
3,415,154	131,059	62,000	6,548,126	4,066,584	14,222,923	1929	13,353	1,554	460	43,496	21,208	80,071
3,601,305	121,602	53,600	5,842,763	4,767,120	14,386,390	1930	12,847	1,046	400	36,276	17,542	68,111
2,207,686	128,769	36,000	3,924,692	3,485,287	9,782,434	1931	8,704	714	228	22,440	19,561	51,647
2,632,154	79,219	33,000	5,125,399	1,857,065	9,726,837	1932	10,168	757	143	27,500	15,450	54,018
3,195,294	111,098	33,500	10,708,448	935,582	14,983,922	1933	11,435	1,085	210	58,879	6,752	78,361
3,741,604	116,967	38,000	18,910,687	2,492,230	25,299,488	1934	14,341	876	280	95,193	12,654	123,344
3,853,243	110,960	1,144,374	20,695,423	2,644,214	28,448,214	1935	15,818	1,032	4,763	103,772	16,090	141,475
3,823,137	304,975	552,497	24,511,950	2,802,678	31,995,237	1936	15,051	1,687	2,864	126,143	21,948	167,693
5,588,038	942,548	689,159	14,823,508	3,942,576	25,985,829	1937	19,636	4,012	2,775	93,897	25,630	145,950
4,587,513	1,231,144	718,830	16,065,029	4,023,798	26,626,314	1938	17,066	4,977	2,933	97,451	21,006	143,433
4,837,298	830,480	833,300	18,980,527	2,068,779	27,550,384	1939	17,477	4,651	3,933	105,169	19,468	150,698
2,142,674	180,830	114,717	13,214,990	3,388,442	19,041,653	1940	8,144	1,528	592	86,137	31,899	128,300
2,894,248	552,491	398,235	17,677,198	3,304,657	24,290,751	1941	11,740	4,168	2,969	102,812	24,312	146,001
892,518	144,691	33,214	12,686,640	2,255,908	16,012,971	1942	3,540	1,608	861	79,003	26,474	111,486
1,644,142	586,102	58,000	14,016,179	3,738,818	20,043,241	1943	7,280	3,231	1,365	86,151	24,919	122,946
2,355,010	65,460	50,000	18,271,859	3,548,422	24,290,751	1944	8,777	901	1,200	96,853	20,852	128,583
2,835,173	221,218	26,000	12,062,111	2,875,323	18,019,825	1945	11,188	2,894	907	78,653	21,123	114,769
3,544,907	341,423	133,727	4,902,625	1,431,600	10,354,282	1946	15,869	3,826	1,633	52,895	10,561	84,784
3,779,675	200,801	246,184	2,633,604	1,778,327	8,415,449	1947	14,232	1,631	2,040	37,065	12,773	62,611
3,501,631	210,923	114,928	2,833,197	3,427,273	10,087,952	1948	12,683	3,269	1,228	44,450	31,087	92,717
668,086	207,000	26,700	6,725,255	2,880,219	10,507,260	1949	3,608	3,200	1,786	66,504	31,419	106,517
3,033,184	110,960	23,085	7,202,130	4,015,024	14,384,383	1950	13,694	1,032	1,260	70,769	34,174	120,929
1,439,865	164,000	24,000	2,735,590	4,087,136	8,450,591	1951	6,671	1,178	1,150	41,498	34,235	84,732
803,467	130,000	19,000	1,280,994	250,465	2,483,926	1952	4,590	897	744	37,149	4,764	48,144
500,713	169,000	53,000	814,221	3,823,436	5,360,370	1953	2,544	2,690	1,607	25,121	26,944	58,906
676,570	244,343	51,380	1,408,245	4,776,395	7,156,933	1954	3,069	5,635	1,519	30,278	31,143	71,644
1,041,989	138,000	72,000	1,502,797	3,592,157	6,346,943	1955	4,480	3,200	1,800	30,740	25,104	65,324
1,723,350	93,000	86,000	1,190,259	6,691,082	9,783,691	1956	7,919	2,100	2,000	30,664	51,992	94,675
1,718,147	139,000	83,000	924,593	3,459,800	6,324,540	1957	7,865	1,676	1,600	29,065	27,214	67,420
1,511,300	228,313	90,000	1,438,738	5,269,109	8,537,460	1958	6,484	2,167	1,200	28,994	35,173	74,018
1,778,248	192,328	120,000	751,199	6,292,276	9,134,051	1959	8,094	2,477	1,600	24,164	50,233	86,568
1,385,218	73,020	110,000	897,712	2,462,000	4,927,950	1960	6,103	1,423	1,800	29,254	18,358	56,938
625,786	56,463	26,000	834,600	5,334,409	6,877,258	1961	3,576	1,571	2,100	24,176	38,227	69,650

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BY-PRODUCTS

Canada Sparks the Rise

• Pacific fish by-products business rose by about 20% in 1961 over the low level of the previous year — but only because of the revival of activity in British Columbia.

All other principal areas showed the effects of continuing low market prices on the one hand and high costs on the other, with a resulting press on profits.

The favorable production of British Columbia could have been considerably better if it had not been for a hold-up over prices which kept a substantial portion of the fleet from fishing for a period of slightly more than a month.

Agreement on prices, reached Nov. 20, 1961, sent the boats out for a month of fast work before the holidays.

Canada, with 2,462,000 gals. of oil and 18,358 tons of meal, easily dominated the reduction business of Pacific North America, whose production for the calendar year 1961 counted 6,872,258 gals. of oil and 69,650 tons of meal—scant production for a business which 25 years ago was producing as much as 30,000,000 gals. of oil a year.

The Canadian price on which settlement was reached in the fall of 1961 called for a price of $10.40 per ton. The last previous agreement for this winter herring fishery in Canada called for $13 per ton, a level at which operations could not be sustained in the face of a subsequent collapse of fish meal prices due to the prodigious production in Peru.

• Based on the domestic production and imports, the United States supply of fish meal during the first 11 months of 1961 amounted to 470,100 tons—84,100 tons or 22% above the corresponding 1960 period. Domestic production was 5,500 tons and imports 78,600 tons greater than the 11-month period of 1960. Peru continued to lead other countries with shipments totaling 132,300 tons during the 1961 11-month period.

The total United States supply of fish meal from January through November, 1961, exceeded the full peak year of 1959—when the quantity for the entire year amounted to nearly 440,000 tons.

The United States supply of fish solubles, including homogenized fish, during the period January through November of 1961 totaled 111,400 tons —12,300 tons more than during the comparable period of 1960. Solubles and homogenized fish manufactured from domestically-caught fish made up 94% of the 1961 11-month supply, while 6% of the supply was imported.

• At the middle of January, 1962, tuna meal was selling in Los Angeles at $111 to $114 per ton for 60% protein meal, sacked in paper.

There were no sardine meal offerings on the California market at that time.

British Columbia herring meal, 70% protein, sacked in paper, was offered at $129.50, with last sales reported $3.50 less. At the same time 66% Peruvian anchovy meal was being offered in Los Angeles at $118.

F.D.A. Rejects Fish Flour

• The bloom faded from the bright promise of fish flour early in 1962 when the United States Food and Drug Administration, clashing sharply with the views of other U. S. government agencies, ruled that a high-grade edible protein-rich food could not be produced for domestic use in the United States unless it was made from dressed fish, which would render it nutritionally less valuable and much more expensive.

Fish flour was approved for export but not for the American consumer.

Denial of the right of the American consumer—who eats whole oysters and clams without question, and with the blessing of the Food and Drug Administration — to the complete nutritional and economic advantages of fish flour made from whole fish produced a violent adverse reaction in Congress.

In the autumn of 1961 the Secretary of the Interior and the director of the United States Bureau of Commercial Fisheries both officially supported and advocated technological research and development which would permit the manufacture of fish flour.

Pacific Coast Fish Oil and Meal - 1961

Regions	Fish Meal Tons	Herring Oil Gallons	Sardine Oil Gallons	Other Fish Oils Gallons	Total Oil Gallons	Regions
Alaska	3,576	625,786	---	---	625,786	Alaska
British Columbia	38,227	5,261,409	---	73,000	5,334,409	British Columbia
Washington	1,571	8,000	---	48,463	56,463	Washington
Oregon	2,100	---	---	26,000	26,000	Oregon
California	24,176	---	83,010	751,590	834,600	California
TOTALS	69,650	5,895,195	83,010	899,053	6,877,258	TOTALS

NOTE: Fish oils, including those in British Columbia, are stated in U. S. standard gallons.

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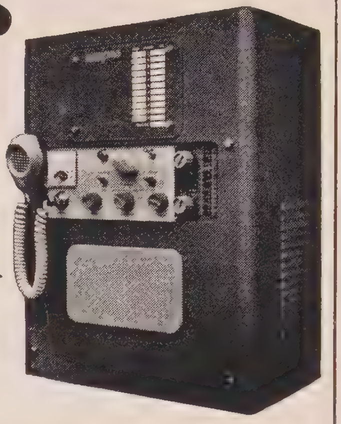

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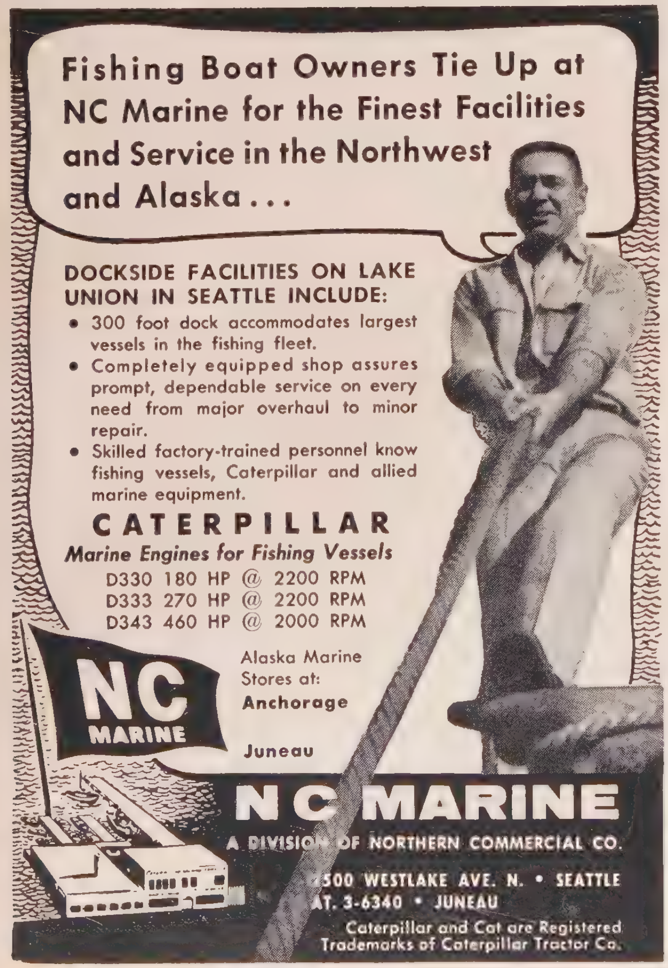

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Now another government agency forbids the United States fishermen and manufacturers to make such a product for the American consumer.

In another capricious action less than two years ago the Food and Drug Administration forbade the use of nitrites and nitrates in the preparation of fish products, despite the fact that another agency of the United States — the Department of Agriculture — permits their use in the curing of hams, corned beef and other meats, products in which they have been used for generations.

F.D.A. Statement on Fish Flour

● In order that the industry may have available for ready reference the official statement of George P. Larrick, Commissioner of Food and Drugs, on this controversial subject, due to receive the attention of Congress, Pacific Fisherman International Yearbook presents it here in full:

“The Food and Drug Administration has completed study of almost 2,000 comments received on a previously published proposal to establish a standard of identity and thus legalize the marketing in the United States of a ‘whole fish flour’ made by grinding and drying entire fish of various sizes and varieties. During informal discussions before the proposal was submitted, we had expressed the opinion that such a product would be classed as filthy and thus illegal under the terms of the Federal Food, Drug, and Cosmetic Act because of the inclusion of the heads, tails, fins, viscera and intestinal contents. Proponents of the product, however, had maintained that we were not properly interpreting consumer understanding of the term ‘filth.’ For this reason the proposal for a standard was published, inviting all to express their views in the public record.

“Of the several hundred individual consumers and groups representing consumer interests who wrote, most opposed the adoption of the proposed standard because the article was to be made from fish which had not been cleaned to remove those portions not customarily regarded in the United States as suitable for human food. Members of the food industries objected to the proposal on the grounds that legalization of such a product would adversely affect public confidence in commercially prepared food products now being made from clean, sound, wholesome ingredients under sanitary conditions. Many State and local food control agencies expressed the view that the product as described in the proposal would be classed as in violation of State and local laws.

“The proposal was strongly supported by firms and individuals connected with the fishing industry, many of whom frankly stated that authorization for this product as human food in the United States would be of great economic benefit to that industry and its employees. Others who favored the proposal pointed out that the product would be an excellent source of protein available at a low price for shipment to the under-developed countries of the world.

“Under the present terms of the Food, Drug, and Cosmetic Act it is entirely legal to prepare such a whole fish flour in the United States for export to any country in the world the laws of which do not prohibit that product. It is not unusual to encounter situations where a food entirely acceptable to the people of one country is not authorized for sale in others. This works both ways, in that certain countries prohibit the marketing of certain foods which are readily available and legal in the United States.

“While some have suggested that the ‘whole fish flour’ be so labeled that American consumers could choose or reject it, as they desire, this would not resolve the problem, since whole fish

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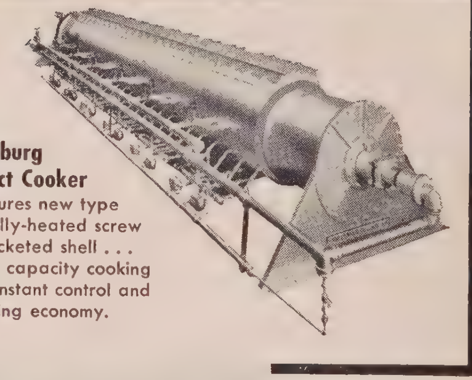

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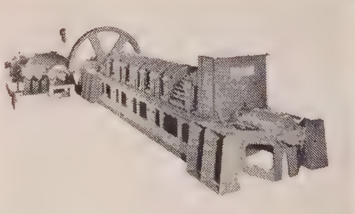

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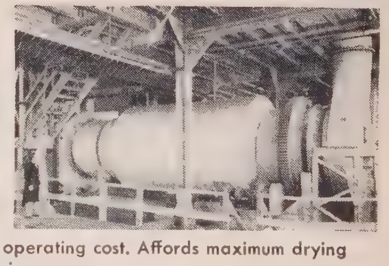

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flour would not be eaten 'as is.' It would be used in preparing foods in factories, restaurants, and the like.

"As a result of consideration of all the available facts and opinions, the Food and Drug Administration is publishing an order which establishes a standard for 'fish flour' but requires that this be made from the cleaned fish after discarding the heads, tails, fins, viscera and intestinal contents. A product meeting this standard would be legal for shipment within the United States."

Meal Imports Outstrip Output

- Imported fish meal continued in 1961 to command an increasing share of the United States consumption, on the basis of figures on production and imports for the first 11 months of the year.

These data showed United States production in short tons as:

Product	1961	1960
Menhaden	237,286	212,541
Tuna, etc.	19,189	23,963
Herring, Alaska	3,576	6,103
Other	15,504	27,399
TOTAL	275,555	270,006

During the same period the imports in short tons were:

Source	1961	1960
Canada	35,861	29,588
Peru	132,321	58,152
Chile	10,738	17,990
Angola	1,543	360
So. Africa	12,626	6,672
Others	1,488	3,235
TOTAL	194,577	115,997

Feature of the 1961 imports, in addition to their record volume, is the astonishing growth of the tonnage coming from Peru, which more than doubled as compared with the previous year.

Up-Grading of Fisheries By-Products Intrigues

- Up-grading becomes a primary consideration in the fish by-products business of the Pacific as commodity volume expands and prices of fish meal and oil gradually recover from the sinking spell which challenged the industry around the whole world.

Peru's output is still growing, and Chile appears to be coming fast as she views the example of her spectacular neighbor.

Prospects for further growth in the field of fish meal and oil continue to expand. Of that there can be no doubt; and in those products there will be no shortage; but—

How to recover the greatest possible economic return from fish material becomes a primary concern of operators around the whole Pacific Rim—and particularly to integrated operations in or near major centers of population.

This is true particularly in California, the Pacific Northwest states, British Columbia and Japan; and the success which has attended pioneering ventures in this field points plainly to further projection of the trend.

- Japan is perhaps the prime example of the up-grading of fish by-products. Operators there — the larger ones in any case — generally have fur-farming divisions where waste from their fish plants is fed to fur-bearers, with handsome balance sheet results.

(A reverse condition is found in the Pacific Northwest, where fur-farmers have gone into the fishing business to provide a sure supply of fish for their minks.)

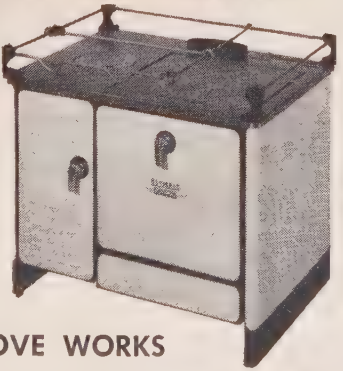
Again, the Japanese integrated companies have established themselves in the poultry business, feeding the fish meal they produce to raise cockerels to broiler size. They are not interested in egg production, but have found that they can get a larger monetary return from fish meal fed to their flocks than when they sell it in a highly competitive world market for protein concentrates. They make just as much fish meal, but they provide their own market for it, and cash-in on the growing Japanese demand for meat. If it were not for the fact that the Japanese feed mixer must import most of his bran and middlings their joy would be full.

European agricultural economists have found that the most productive way to convert crude protein into meat is through the digestive mechanism of chickens raised under modern methods and standards.

The Japanese are proving this again; and the Japanese population is finding one of its delights in a growing supply of broilers.

- The search for a wholly satisfactory method of economically producing edible fish flour for human consumption, and of convincing a significant segment of the world's population that it is good food and something they *like*, goes on steadily—but without too much encouraging progress.

Where transportation costs permit and populations and their standards of living suffice, nutrition economists incline to the belief that perhaps fish protein can be more productive in feed for poultry or animals than in fish flour.



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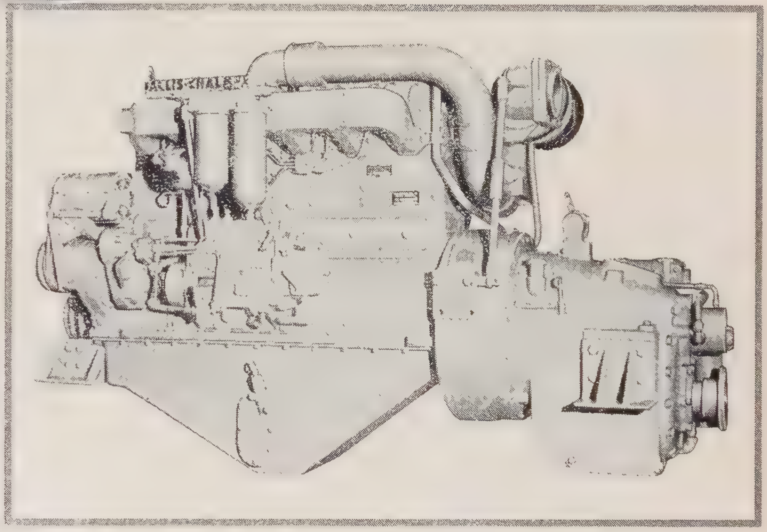

Allis-Chalmers Marine Diesels to meet your needs

Model	Bore and Stroke	Cu. In. Displacement	No. of Cylinders	Rated Hp @ RPM	SHP Light-Duty @ RPM	SHP Heavy-Duty @ RPM
D-273	3-3/4 x 4-1/8	273	6	85 @ 2800	85 @ 2800	60 @ 2000
10000	4-7/16 x 5-9/16	516	6	145 @ 2200	140 @ 2200	100 @ 1800
11000	4-7/16 x 5-9/16	516	6	210 @ 2200	200 @ 2200	150@ 1800
16000	5-1/4 x 6-1/2	844	6	235 @ 2100	215 @ 2000	170 @ 1800
21000	5-1/4 x 6-1/2	844	6	350 @ 2100	320 @ 2000	230 @ 1800

Allis-Chalmers Diesel Electric Sets . . .

are available in sizes up to 200 kw. Only Allis-Chalmers builds all major components — (1) modern engines, (2) generators built to high standards, (3) voltage regulators that provide quick response to sudden load changes, and (4) matched switchgear.

Engine Model	Marine Applications Kw Rating @ RPM 60 Cyl.
D-344	40 @ 1800
10000	60 @ 1800
11000	100 @ 1800
16000	125 @ 1800
21000	175 @ 1800

● Selective utilization of portions of the available raw material as food, whether for human or animal nutrition other than as mixed feed, has made possible the initiation of American whaling operations on San Francisco Bay; and the resumption of whaling on the Vancouver Island coast of British Columbia.

Moreover, it has permitted at least one former fillet plant on the Columbia River to resume operations in the fillet field, while utilizing undesirable whale fish and fillet plant waste for fur animal feeding. In the case of this plant, and others on the Oregon coast, the deliveries are sorted and the most desirable sizes and varieties are used for filleting, while the majority of the catch goes into freezer for food for mink and other fur-bearers.

In the revived California whaling industry the desirable portions of the whales are used in the production of canned and frozen pet food.

British Columbia Packers' whaling station is resuming operations with Japanese specialists directing the care and recovery of meat in good condition from the whales taken. This is frozen and shipped to Japan for food.

Herring and Whaling

● Two important divisions of British Columbia's fisheries operations, whaling and herring production, were in trouble last season. Whaling was completely idle; and the herring fishery came to life only late in the Fall when the sixth strike of fishermen in the past nine years terminated with agreement on prices.

Prospects for a busy and interesting whaling season in 1962 brightened when agreement was reached on terms whereby British Columbia Packers, Ltd., will join forces with Taiyo Gyogo K.K., Japan's great fishing organization, in operations off the coast of Vancouver Island and the Queen Charlottes.

Not only will this be the first time that Canadian and Japanese companies have combined in a joint fishing venture; but it will be the first season in B.C. whaling history when accent will be on production of whalemeat for human consumption rather than meal and oil.

The Japanese will provide two catcher boats and the Canadian company four. The Japanese craft, formerly used in Antarctic operations, will be powered by 1600 hp diesel engines and equipped with modern apparatus. Some Japanese skippers, gunners and engineers will participate in the whale hunt, and there will also be a Japanese assistant manager, two inspectors and several technicians who will instruct other workers in the procedure for preparing the meat on the flensing deck at the Coal Harbor shore station, where considerable new processing equipment will be installed.

Some of the Japanese technical men on the catcher boats will be trained in the handling of electronic detection gear and they in turn will demonstrate to the Canadian crews how the whales should be handled after killing in order to prevent rapid deterioration of the meat. When the training period is ended, probably after this season, most of the Japanese will probably return to Japan and their work will be carried on in future by Canadians.

● So far as herring are concerned, the 1961 fall season was to open October 16, but it was not until November 22 that the fishermen went to sea.

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Pacific Canned Pet Food

(In standard cases equivalent to 48 lbs. each)

YEAR	Alaska		California		Washington and Oregon		Pacific Totals	
	Cases	Value	Cases	Value	Cases	Value	Cases	Value
1949	75	$450	896,489	$4,222,300	*	*	896,564	$4,222,750
1950	--	---	1,388,110	7,471,751	*	*	1,388,110	7,471,751
1951	35	263	1,192,428	6,340,527	**	**	1,192,463	6,340,790
1952	80	600	1,328,513	6,753,039	**	**	1,328,593	6,753,639
1953	50	375	1,091,815	5,778,955	34,400	$133,300	1,126,265	5,912,630
1954	--	---	976,477	5,098,992	49,148	188,736	1,025,625	5,287,728
1955	--	---	1,949,375	10,062,298	61,846	242,628	2,011,221	10,304,926
1956	--	---	2,548,328	12,084,221	78,398	316,127	2,626,726	12,400,348
1957	--	---	2,632,149	11,778,910	88,409	389,792	2,720,558	12,168,702
1958	--	---	2,327,734***	15,143,559	98,920	539,107	2,426,654	15,682,666
1959	--	---	2,869,604	14,468,684#	130,376	757,484	2,999,980	15,226,168
1960	--	--	2,936,232#	15,668,274#	134,343	783,814	3,170,575	16,452,088

*Not Available. **Combined with California. ***Contains small amount packed in American Samoa.

#Contains small amoun's packed in American Somoa and Puerto Rico.

the delay being caused by disagreement over prices. The price per ton finally agreed on was $10.40.

In 1959 the prevailing price was $13, established after a five-month strike but when the market declined owing to competition of South American and other fisheries the operators suspended operations, claiming inability to maintain the price. The plants remained idle until late in 1960, when agreement was reached on a price of $8.80 a ton. In the Fall negotiations last season, the operators first offered $9.60 a ton, which was not acceptable and the $10.40 price was finally agreed on after a month of bargaining. The dispute did not affect vessels fishing for the co-operative organization.

A new factor entered into discussions of the herring situation last year —the suggestion that if the herring fishery continued to be unexploited Japanese fishermen would have justification in entering the offshore herring areas in accordance with provisions of the International North Pacific Fisheries Commission under which Japan abstains from such herring fishing only if the fishery is being commercially exploited.

There are eight reduction plants in B.C. utilizing herring and producing oil and meal. Many of the properties of herring meal are now being produced synthetically and, while more costly than the natural elements in herring meal, when added to soya meal they are able to produce a competitive material. About 90% of B.C. herring meal is used in poultry feeding. Protein content varies. Peruvian meal is said to average just over 60%; B.C. meal 70%.

Reviewing the industry's situation, Fisheries Association of B.C. stated: "From the standpoint of market demand, B.C. fish meal and fish oil have a secure place only providing we can introduce the flexibility into our cost structure which is essential if we are to follow the fluctuations in price which exist in the marketing of a world commodity of this kind.

"Current market prices for herring oil and meal present a contrast. Prices for herring meal have improved from the low levels prevailing in the spring of 1961, but conversely herring oil has reached its lowest level in the past eleven years. Following is a record of average market prices for herring meal during the past six winter seasons:

1954-55—$1.95 to $2.30 per unit
1955-56—$1.85 to $2.25 per unit
1956-57—$2.00 to $2.15 per unit
1957-58—no winter operation
1958-59—$2.10 to $2.30 per unit
1959-60—$1.65 to $2.10 per unit
1960-61—$1.30 to $1.80 per unit

"The limited quantities of meal currently available (Fall of 1961) are being traded at $1.85 per unit. It can be seen therefore that while herring meal prices have recovered to some extent from the very low levels of 1960 and early 1961 they are substantially below the levels which prevailed from 1954 through the first half of 1959.

"During the same seven-year period, herring oil has ranged from a high of 9 3/4¢ per pound in the 1956-57 season to a low of 6 3/4¢ per pound in the 1959-60 season. Possibly 60 cars of B.C. herring oil were sold during the week of September 18th 1961 at a price of 6¢ per pound. This very low price on B.C. herring oil is a result of over-production of fish and marine oils throughout the world. Icelandic herring oil is being landed in Eastern Canada at depressed price levels and we understand that approximately 4,000 tons was sold in Toronto, normally a good market for B.C. herring oil. In order to protect against complete loss of their market to Iceland, B.C. producers were forced to reduce their prices to the competitive level of 6¢ per pound F.O.B. Vancouver."

The fishermen's price paid in British Columbia for reduction herring is not comparable with United States ex-vessel prices, since the British Columbia plant operators own the vessels and gear and provide for most of the operating expenses. The price paid the fishermen for herring is divided equally between all crew members (usually 8 persons) including the captain, on a per-ton basis. The only deduction made is for food. In addition to the fishermen's price, the reduction plant operators pay the captains a bonus equivalent to one crew share or $1.30 per ton, based on the price of $10.40 per ton.

The landed or ex-vessel price of British Columbia reduction herring prior to the recent increase was reported at between $21 and $22 per ton which would be comparable with ex-vessel reduction fish price.

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